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FINAL ACOUSTICAL ANALYSIS REPORT

Tentative Parcel Map 20675^{RPL2}
Boulevard. California

Prepared For

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TPM20675RPL¹

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1.0 EXECUTIVE SUMMARY

The proposed project, County of San Diego Tentative Parcel Map 20675^{RPL2}, is a minor subdivision to divide one existing parcel into three parcels, for eventual construction of three single-family homes on 33.5 acres in Boulevard, California. The project site is located north of Interstate 8 (I-8), along Ribbonwood Road. This analysis and report will focus on the traffic noise impacts from I-8 and Ribbonwood Road on Parcels 1, 2, and 3 of the proposed project.

The present and future noise environment is primarily the result of automobile and truck traffic traveling on I-8, with additional impacts from Ribbonwood Road. Currently, the calculated overall traffic noise level at the southern most property line (Parcel 3), facing I-8, is approximately 58.8 Community Noise Equivalent Level (CNEL). Without consideration of the proposed project buildings, the calculated future buildout (year 2025) exterior traffic noise level to impact the southern property line of Parcel 3 will increase to approximately 63.3 CNEL.

The noise regulations applicable to this project are found in the County of San Diego Noise Element to the General Plan. The regulations generally limit outdoor use areas of residential development to exterior noise impacts of 60 CNEL or less. Calculations show that future exterior traffic noise levels will exceed the outdoor use noise limit at Parcels 1, 2, and 3. Possible noise mitigation recommendations include a 5-foot tall sound attenuation barrier to be placed at proposed pad elevations along the southern property lines of Parcels 1, 2 and 3. Parcel 3 would also require a 5-foot tall sound attenuation barrier to be placed at proposed pad elevation along the western property line. The proposed mitigation is a feasible design to reduce outdoor use area noise levels to 60 CNEL; the actual mitigation is dependent on the final project building plans.

The proposed development must comply with the US Fish and Wildlife Service standards of one-hour average sound level impacts of less than 60 decibels on sensitive avian habitat. According to the Biological Resources Survey Report, one sensitive bird, the Turkey Vulture, was detected on-site. The single Turkey Vulture was observed soaring over the site and adjacent lands; however, no nesting habitat was present on-site and it is not anticipated that there is any Turkey Vulture habitat on or near the project site. Furthermore, the Biological Resources Survey Report indicates that indirect biological impacts from construction noise are less than significant, based on the limited findings described on Page 10 of this report.

Within the scope of this project, interior mitigation for ground-level residential rooms may or may not be necessary, due to the design and possible placement of sound attenuation barriers between the residences and the roadways. However, noise mitigation for unshielded portions of second-level rooms, if any, may be necessary. Interior noise mitigation is feasible and attainable through common construction practices, but would require an acoustical analysis to determine the exact nature and extent of mitigation, if applicable, at the time the building plans are submitted.

2.0 INTRODUCTION

This report is submitted to satisfy the County of San Diego acoustical analysis requirement for tentative parcel map approval. Its purpose is to assess future noise impacts from adjacent and nearby roadway vehicle traffic and other possible noise sources that may impact the proposed project. This study will determine if mitigation is necessary and feasible to reduce exterior noise levels to below 60 CNEL, the County of San Diego exterior residential land use noise limit. Feasibility of interior noise mitigation will also be addressed.

All noise level or sound level values presented herein are expressed in terms of decibels, with A-weighting to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ} for a specified duration. The Community Noise Equivalent Level (CNEL) is a 24-hour average, where sound levels during evening hours of 7 p.m. to 10 p.m. have an added 5 dB weighting, and sound levels during nighttime hours of 10 p.m. to 7 a.m. have an added 10 dB weighting. This is similar to the Day-Night sound level, which is a 24-hour average with an added 10 dB weighting on the same nighttime hours, but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on A-weighted decibels. These metrics are used to express noise levels for both measurement and municipal regulations, for land use guidelines, and enforcement of noise ordinances. Some of the data may be presented as octave-band filtered sound levels. Further explanation can be provided upon request.

2.1 Project Location

The property is located just north of Interstate 8 (I-8), south of Roadrunner Lane, and east of Ribbonwood Road, in Boulevard, California. The property consists of County of San Diego Tentative Parcel Map Number 20675, constituting "parcel 3 of parcel map 2990, in the County of San Diego, State of California." The Assessor's Parcel Number for the property is 612-021-05. The overall property is approximately 33.5 acres in size. Surrounding land use in the immediate vicinity of the project consists of residential properties and undeveloped land. A few homes are nearby, but much of the surrounding land is undeveloped. Currently, the project site is zoned for general rural and general commercial use (S-92 and C-36).

The project location is shown on the Thomas Guide map, Figure 1, following this report. An Assessor's parcel map, a satellite aerial photograph, and a topographic map of this area are also provided as Figures 2 through 4.

2.2 Project Description

The proposed project is a minor subdivision to divide one existing parcel into three parcels, for eventual construction of single-family homes. Driveway access to the lots will consist of 20-foot openings along Ribbonwood Road, a publicly maintained road. Access along Roadrunner Lane will be relinquished. The project site is currently unimproved.

3.0 ENVIRONMENTAL SETTING

3.1 Existing Noise Environment

The present noise environment on-site is primarily the result of vehicle traffic traveling on I-8, with additional impacts from Ribbonwood Road. Roadrunner Lane, adjacent to the project site on the north, is an unclassified roadway with no speed limit or available traffic data. Roadrunner Lane will contribute negligible traffic noise to the project site. No other source of noise in the vicinity is considered significant.

The predominant noise source, Interstate 8 to the south, is a four-lane, two-way freeway with vehicles traveling east-west. Emergency roadway shoulder parking is permitted on both sides of this freeway in the vicinity of the project. The average right-of-way width is estimated to be 146 feet. The grade for I-8 in this area is approximately four percent. The freeway is approximately 70 feet below the proposed project site grade. The posted speed limit for cars is 65 mph in the project area. In addition, the posted speed limit for trucks is 55 mph. A photograph of a posted truck speed limit sign in the project area is included in Appendix C of this report. The current traffic volume for I-8 in the project area is 13,500 average daily trips (ADT), according to Carlena Darrieulat, Transportation Planner of Caltrans District 11, Division of Traffic Forecasting, and based on 2002 Traffic Volumes on California Highways.

Ribbonwood Road, west of the project site, is a two-way, two-lane rural light collector roadway, traveling north-south. This roadway passes under the I-8 freeway. The average right-of-way width for Ribbonwood Road is approximately 60 feet, with 24 feet pavement-to-pavement. Currently, the posted speed limit for this roadway in the project area is 50 mph. The section of Ribbonwood Road in the vicinity of the project site currently carries a traffic volume of approximately 1,000 ADT, according to Nick Ortiz, Associate Transportation Specialist of the County of San Diego Public Works Department, and based on the 2002 Traffic Census.

Traffic volumes for the roadway sections near the project site are shown in Table 1. For more complete information, please refer to Appendix A, Sound32 Data and Results.

Table 1. Overall Roadway Traffic Information			
Roadway Name	Speed Limit	Current ADT	Projected ADT
Interstate 8	65 mph	13,500 ADT	25,500 ADT
Ribbonwood Road	50 mph	1,000 ADT	8,000 ADT

Measured Noise Level

An on-site noise measurement was made at the site during the day on Monday, May 19, 2003. At that time, the weather conditions were fair: sunny and clear skies, no breeze, and a temperature in the low 60s. A single 15-minute traffic model calibration noise measurement was made along the project's southern property line, facing I-8. Please refer to Figure 5 for the noise measurement location. This single on-site traffic noise measurement was deemed sufficient to represent existing traffic noise impacts to the project site.

The measurement site location was elevated approximately 70 feet above the I-8 roadway grade. The sound meter was fixed to a tripod, which places the microphone five feet above the measurement site elevation. All traffic (cars, medium trucks, and heavy trucks) was counted during the 15-minute period. The calculated hourly equivalent traffic volumes are presented in the "Traffic Count During Noise Measurement" table in Appendix A, along with a complete tabular listing of all traffic data recorded during the sound measurement.

The noise measurement was stored in the instrument's internal memory and then downloaded into a portable laptop computer. The measured on-site noise level was 54.9 dBA L_{EQ} . The on-site measurement conditions and results are shown in Table 2, below, and Appendix A.

Table 2. On-Site Noise Measurement	
Date	Monday, May 19, 2003
Time	6:40 a.m. to 6:55 a.m.
Conditions	60° F, Sunny and Clear Skies, No Breeze
Measured Noise Level	54.9 dBA Leq

Calculated Noise Level

Noise levels were calculated for the site using the methodology described in section 4.1 of this report, for the locations, conditions, and traffic volumes counted during the on-site traffic noise measurement. The calculated noise levels (L_{EQ}) were compared with the measured on-site noise levels to determine if adjustments or corrections (calibration) should be applied to the traffic noise prediction model, Sound32. Adjustments are intended to account for site-specific differences, such as reflection and absorption, which may be greater or lesser than accounted for in the model.

The measured noise level of 54.9 dBA L_{EQ} was compared to the calculated (modeled) noise level of 55.3 dBA L_{EQ} , for the same conditions and traffic flow. Since there was only a 0.4 dB difference between the measured and the calculated noise level, no adjustment was deemed necessary to model future noise levels for this location. Please refer to Table 3, on the following page.

Table 3. Calculated Versus Measured Traffic Noise Data				
Roadway	Calculated	Measured	Difference	Correction
Interstate 8	55.3 dBA L _{EQ}	54.9 dBA L _{EQ}	0.4 dB L _{EQ}	None Applied

Truck percentages for I-8 were provided by Carlena Darrieulat, of Caltrans District 11, who estimated a mix of 4.0% medium trucks and 9.0 % heavy trucks. Truck percentages for Ribbonwood Road were not available. However, based on our experience and on-site observations, and estimates provided by the County of San Diego and the San Diego Association of Governments (SanDAG) for similar roads, a mix of 5.0% medium trucks and 1.0% heavy trucks was used to calculate vehicle traffic noise on Ribbonwood Road.

Currently, the calculated overall combined traffic noise level at the southern most property line (Parcel 3), facing I-8, is approximately 58.8 CNEL.

3.2 Future Noise Environment

The future on-site noise environment will also be a result of vehicle traffic traveling on I-8 and Ribbonwood Road. In the year 2025/buildout, I-8 is expected to reach 25,500 ADT, according to 2025 Future Traffic Projections based on SANDAG GIS, provided by Carlena Darrieulat, of Caltrans District 11. The 2020 traffic forecast for Ribbonwood Road is 8,000 ADT, according to the SANDAG Series 9 2020 Model, provided by Nick Ortiz, of the County of San Diego. The same truck percentages from the existing traffic volumes were used for future traffic modeling. The roadways and roadbeds are expected to remain the same. For further future ADT traffic volumes, please refer to Appendix A. For further roadway details including elevations, please refer to Appendix B, Caltrans AsBuilt Plans for Interstate 8 including a SanGIS Satellite Aerial Photograph.

The overall future traffic noise level at the southern property line of Parcel 3, facing I-8, will be approximately 63.3 CNEL. The overall 60 CNEL noise contour at the subject property is shown on Figure 5, Tentative Parcel Map Showing Future Traffic Noise Contour and Measurement Location. Also, refer to Figure 6, Tentative Parcel Map Showing Receiver Locations and Proposed Sound Attenuation Barriers.

4.0 METHODOLOGY AND EQUIPMENT

4.1 Methodology

Field Measurement

Typically, a one-hour sound level measurement (A-Weighted L_{EQ}) is recorded for at least one noise-sensitive location on the site. During the noise measurement, vehicle counts of cars, medium trucks (double tires/two axles), and heavy trucks (three or more axles) are made for the corresponding road segment. Supplemental sound measurements of one hour or less in duration are often made to further describe the noise environment of the site. For measurements of less than one hour duration, the measurement time is sufficient for the noise level to stabilize. The vehicle counts are converted to one-hour equivalent volumes. Other field data gathered includes distance measurements or estimations, angles of view, slopes, elevations, roadway grades, and vehicle speeds. These data are checked and compared with the available maps and records.

Roadway Noise Calculations

The Sound32 program, released by the California Department of Transportation, Division of New Technology, Materials, and Research, was used to calculate the future Hourly Noise Level (HNL) at various locations at the project site. The average daytime HNL is computed with Sound32, using a daytime hourly average traffic volume of 0.058 times the ADT. This computation is based on the methodology developed in the Wyle Laboratories Study, which states that 87% of the traffic volume on an average roadway typically occurs between the hours of 7 a.m. and 10 p.m. The HNL is equivalent to the L_{EQ} , and both are converted to the CNEL by adding 2.0 decibels. Future CNEL values are calculated for desired receptor locations using future road alignment, elevations, lane configurations, projected traffic volumes, estimated truck mixes, and vehicle speeds. Noise attenuation methods may be tested and planned with Sound32, as required. In order to ensure a correct roadway model and accurate Sound32 results, I-8 roadway grades were based on As-Built Plans obtained from Caltrans.

4.2 Equipment

Some or all of the following equipment was used at the site to measure existing noise levels:

- Larson Davis System 820 Integrating Sound Level Meter, Serial # 316
- Larson Davis Model CA200 Calibrator, Serial # 292
- Hand bearing magnetic compass, microphone with windscreen, tripods
- Distance measurement wheel, digital camera

The sound level meter was field-calibrated immediately prior to the noise measurement, and checked afterwards, to ensure accuracy. All sound level measurements conducted and presented in this report, in accordance with the regulations, were made with a sound level meter that conforms to the American National Standards Institute specifications for sound level meters (ANSI SI.4-1971). All instruments are maintained with National Bureau of Standards traceable calibration, per the manufacturer's standards.

5.0 IMPACTS

5.1 Exterior

The exterior noise impacts are primarily the result of vehicle traffic traveling on I-8, with additional impact from Ribbonwood Road. Without noise mitigation or the proposed project structures, the future exterior 60 CNEL noise contour will be located on the project site, approximately 1,635 feet from the I-8 centerline. Please see Figure 5, showing the location of the future traffic noise contour.

The expected future traffic noise impact at Parcel 1 is calculated to be 60.4 CNEL. The expected future traffic noise impact at Parcel 2 will be 61.3 CNEL, while the impact at Parcel 3 will be approximately 61.8 CNEL. Mitigation to reduce the overall exterior traffic noise at outdoor use areas on all three parcels will be necessary, in order to meet the County's outdoor noise limit.

Noise from project-related vehicle traffic will be localized on-site at the driveways along Ribbonwood Road. Vehicles entering/exiting the three driveways should have a minimal overall impact on nearby and adjacent land uses, as this activity will generate considerably less vehicle noise than actual traffic on nearby roadways and I-8.

The proposed development must comply with the US Fish and Wildlife Service standards of one-hour average sound level impacts of less than 60 decibels on sensitive avian habitat. According to the Biological Resources Survey Report, prepared by Vincent N. Scheidt, one sensitive bird, the Turkey Vulture, was detected on-site. The single Turkey Vulture was observed soaring over the site and adjacent lands; however, no nesting habitat was present on-site and it is not anticipated that there is any Turkey Vulture habitat on or near the project site. This issue will not be further addressed. Furthermore, the Biological Resources Survey Report indicates that indirect biological impacts from construction noise are less than significant, based on the limited findings described on Page 10 of this report. Please refer to Appendix D for complete Biological Resources Survey Report details.

5.2 Interior

Building pads on Parcels 1, 2, and 3 of this project are expected to be subjected to future exterior noise levels exceeding 60 CNEL. The State building code and the County of San Diego require that interior noise levels of new residential space be 45 CNEL or less, and that an exterior-to-interior acoustical analysis be conducted for new residential projects exposed to exterior noise levels in excess of 60 CNEL.

Interior mitigation for ground-level rooms on Parcels 1, 2, and 3 may or may not be necessary, depending on the design or if there is a sound attenuation barrier placed between the residence and the roadways, which will provide noise impact levels not exceeding 60 CNEL. However, mitigation for unshielded portions of second-level rooms on Parcels 1, 2 and 3, if any, may be necessary.

The expected future traffic noise impact at the second-levels of Parcels 1, 2, and 3 will range from 60.4 to 61.8 CNEL. Due to the surrounding topography, second-level impacts are relatively equal to the ground-level impacts stated above.

6.0 MITIGATION

6.1 Exterior

Calculations show that future exterior traffic noise levels will exceed the acceptable outdoor use noise levels at Parcels 1, 2 and 3. Without noise mitigation or the proposed project structures, the future exterior 60 CNEL noise contour will be located on Parcel 1, approximately 420 feet from the Ribbonwood Road centerline. At Parcel 2, the future exterior 60 CNEL noise contour will be located approximately 490 feet from the Ribbonwood Road centerline. At Parcel 3, the future exterior 60 CNEL noise contour will be located approximately 1,635 feet from the I-8 centerline. Due to the expected future noise level at these project lots, exterior mitigation will be required, in the form of sound attenuation barriers. Once the proposed tentative parcel map is approved, the following mitigation is recommended.

The unmitigated future traffic noise levels impacting Parcels 1, 2 and 3 are calculated to range from approximately 60.4 to 63.3 CNEL. Minimum noise mitigation for all three lots is calculated to consist of 5-foot high sound attenuation barriers placed at pad elevation along the southern property lines of the presidential pads. In addition, Parcel 3 will require a 5-foot tall return sound attenuation barrier along the western property line of the residential pad. Calculations show that these sound attenuation barriers will reduce the future traffic noise levels to below 60 CNEL at the outdoor use areas of Parcels 1, 2, and 3, in compliance with the County noise regulations. The proposed mitigation is a feasible design to reduce outdoor use area noise levels to 60 CNEL; the actual mitigation is dependent on the final project building plans and pad elevations. Depending on the lot layout, it may be possible to mitigate the backyard outdoor use areas of Parcels 1, 2 and 3 using the future homes as sound barriers.

Sound attenuation barriers may be designed as a single sound wall or a combination of a sound wall atop an earthen berm. For the purpose of this analysis, all proposed sound attenuation barrier heights shall be based on the finished proposed pad grade elevation of the lot. A sound wall should be solid and constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps, through or below the wall. Any seams or cracks must be filled or caulked. If wood is used, it can be tongue and groove and must be at least 7/8-inch thick or have a density of at least 3½ pounds per square foot. Where architectural or aesthetic factors allow, glass or clear plastic may be used on the upper portion, if it is desirable to preserve a view. Sheet metal of 18-gauge (minimum) may be used, if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Any gate(s) proposed to be constructed in a sound wall must be designed with overlapping closures.

The future exterior traffic noise levels, with the 2 decibel addition necessary to convert to CNEL, are presented in Table 4 below. The "Unmitigated CNEL" traffic model calculation at the given receiver location reflects the noise attenuation achieved by topography and distance from roadways. The "Mitigated CNEL" noise value represents traffic model calculations with the proposed sound attenuation barriers in place. Please refer to Figure 6 for receiver locations.

Table 4. Future Exterior CNEL			
Receiver Location	Unmitigated CNEL 1st Floor/2nd Floor	Barrier Height	Mitigated CNEL 1st Floor/2nd Floor
R-2/R-5 ~ Parcel 3	61.8/61.8	5 feet	58.2/61.4
R-3/R-6 ~ Parcel 2	61.3/61.4	5 feet	59.9/61.1
R-4/R-7 ~ Parcel 1	60.4/60.4	5 feet	58.8/60.3

The normal method used by the County of San Diego to ensure that suitable noise mitigation is implemented is to place a noise protection easement on the portion of the property that will be exposed to a noise level exceeding 60 CNEL. This easement is intended to require that any plans for residential construction within the affected area be reviewed and appropriate noise analysis and mitigation implemented at the time final grading and/or building plans become available.

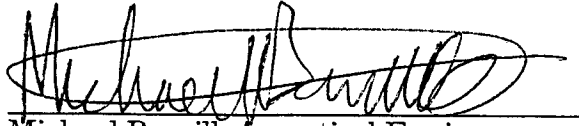
No noise mitigation is required for project-generated traffic, as it will not create any significant increase in noise levels at neighboring properties. In addition, no mitigation is required for sensitive avian habitat, as no nesting habitat was present on-site. Please refer to Figure 6 and Appendix A for more details.

6.2 Interior

The proposed sound attenuation barriers will not block the traffic noise for upper residential floors or rooms with a direct line-of-sight to I-8. These rooms may require mitigation to achieve interior noise levels below the 45 CNEL interior noise limit. Typical residential construction generally achieves at least 15 dB noise attenuation in rooms, even with windows open. Mitigation to any upper-floors and/or unprotected ground-level rooms is feasible and attainable through common construction practices (exterior wall construction and dual-glazed windows). A supplemental exterior-to-interior acoustical analysis may be necessary prior to approval of building plans, to determine the exact nature and extent of this mitigation.

7.0 CERTIFICATION

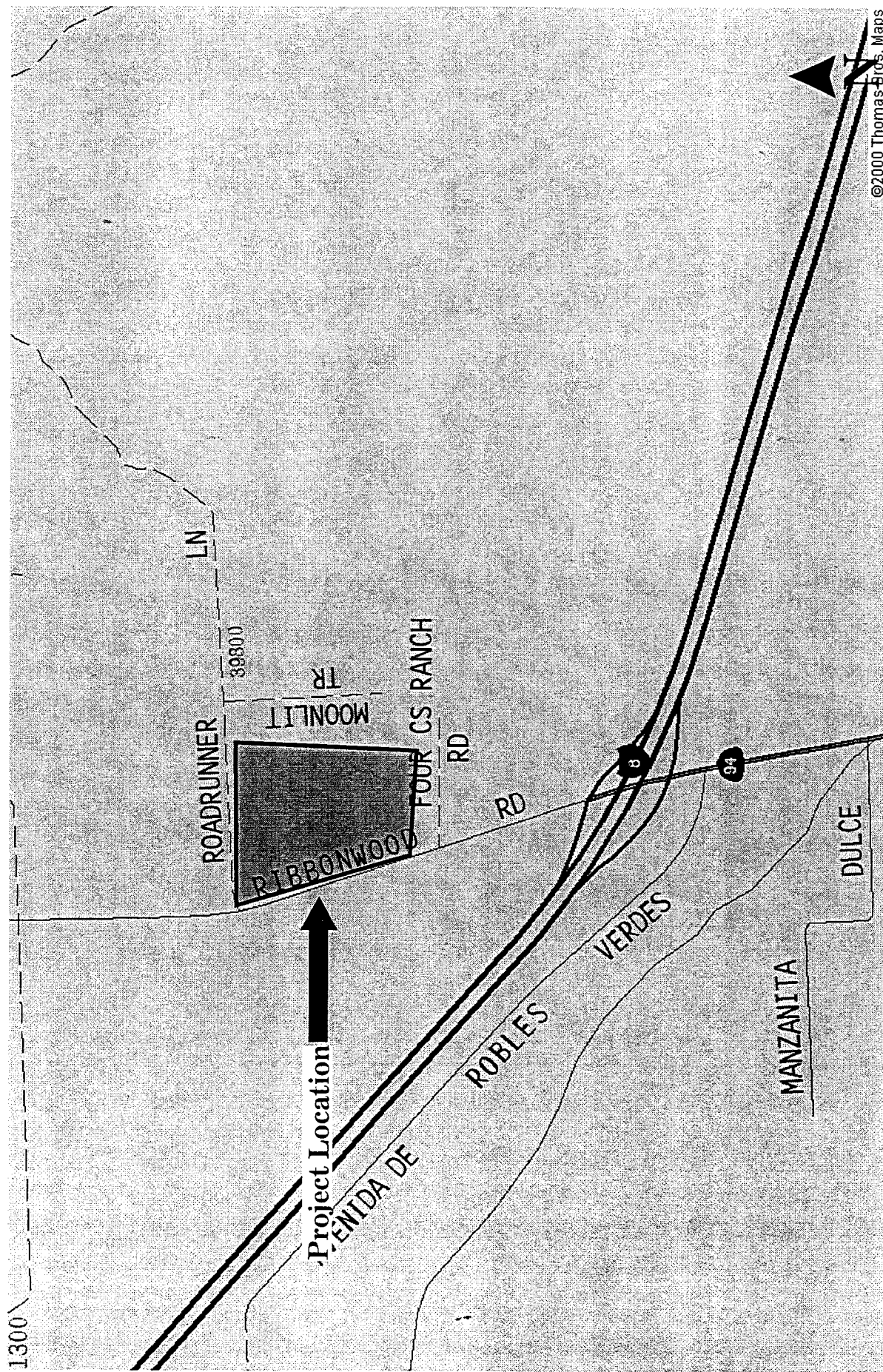
The findings and recommendations of this acoustical analysis report are based on the information available and represent a true and factual analysis of the potential acoustical issues associated with the proposed Tentative Parcel Map 20675, in Boulevard, California. This report was prepared by Michael Burrill, Charles Terry, Jessica Rasmussen, and Douglas Eilar.


Michael Burrill, Acoustical Engineer
Douglas K. Eilar, Principal

8.0 REFERENCES

1. California Department of Transportation, Sound32 Traffic Noise Model.
2. County of San Diego Noise Element to the General Plan.
3. Heeden, Robert A., *Compendium of Materials for Noise Control*, U.S. Department of Health, Education and Welfare, National Institute for Occupational Safety and Health, November 1978.
4. NBS Building Sciences Series 77, *Acoustical and Thermal Performance on Exterior Residential Walls*, U.S. Department of Commerce/National Bureau of Standards, November 1976.
5. Western Electro-Acoustic Laboratory, Inc., 1711 Sixteenth Street, Santa Monica, California 90404, 213-80-9268, *Sound Transmission Loss Vs. Glazing Type, Window Size and Air Filtration*, January 1985. The research described in this report was prepared for the California Association of Window Manufacturers, 823 North Harbor Boulevard, Suite E, Fullerton, California 92632, 714-525-7088.
6. Wyle Laboratories, *Development of Ground Transportation Systems Noise Contours for the San Diego Region*, December 1973.
7. 2001 California Building Code, Based on the 1997 Uniform Building Code, Title 24, Part 2, Volume 1, Appendix Chapter 12, Division II - Sound Transmission Control, Section 1208 - *Sound Transmission Control*.
8. 2001 California Noise Insulation Standards, effective 11/01/02, Based on 1997 Uniform Building Code, California Code of Regulations, Title 24.
9. Biological Resources Survey Report, Dart TPM 20657, Prepared by Vincent N. Scheidt, August, 2003.

FIGURES



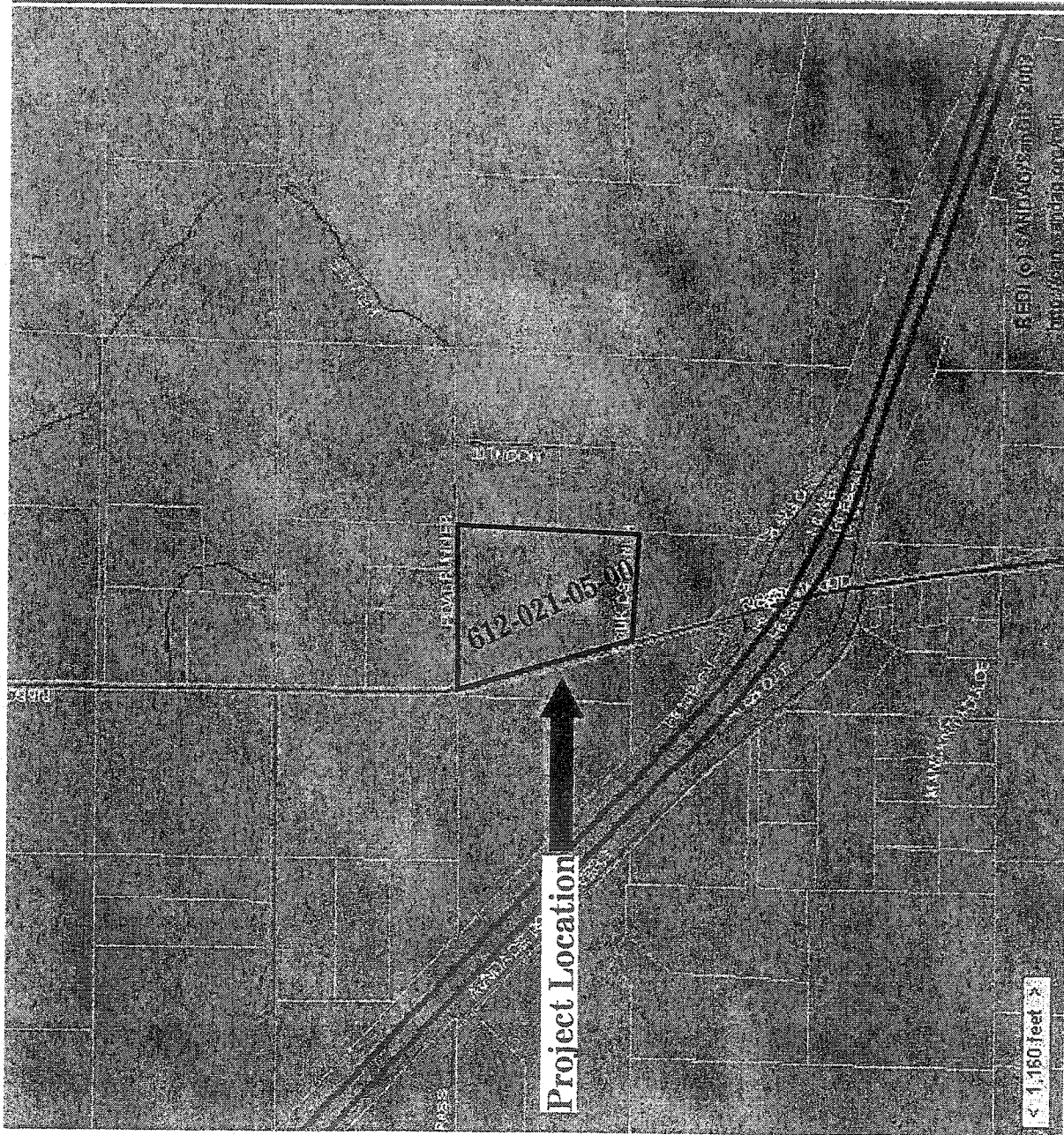
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Thomas Guide Map

Figure 1

LEGEND

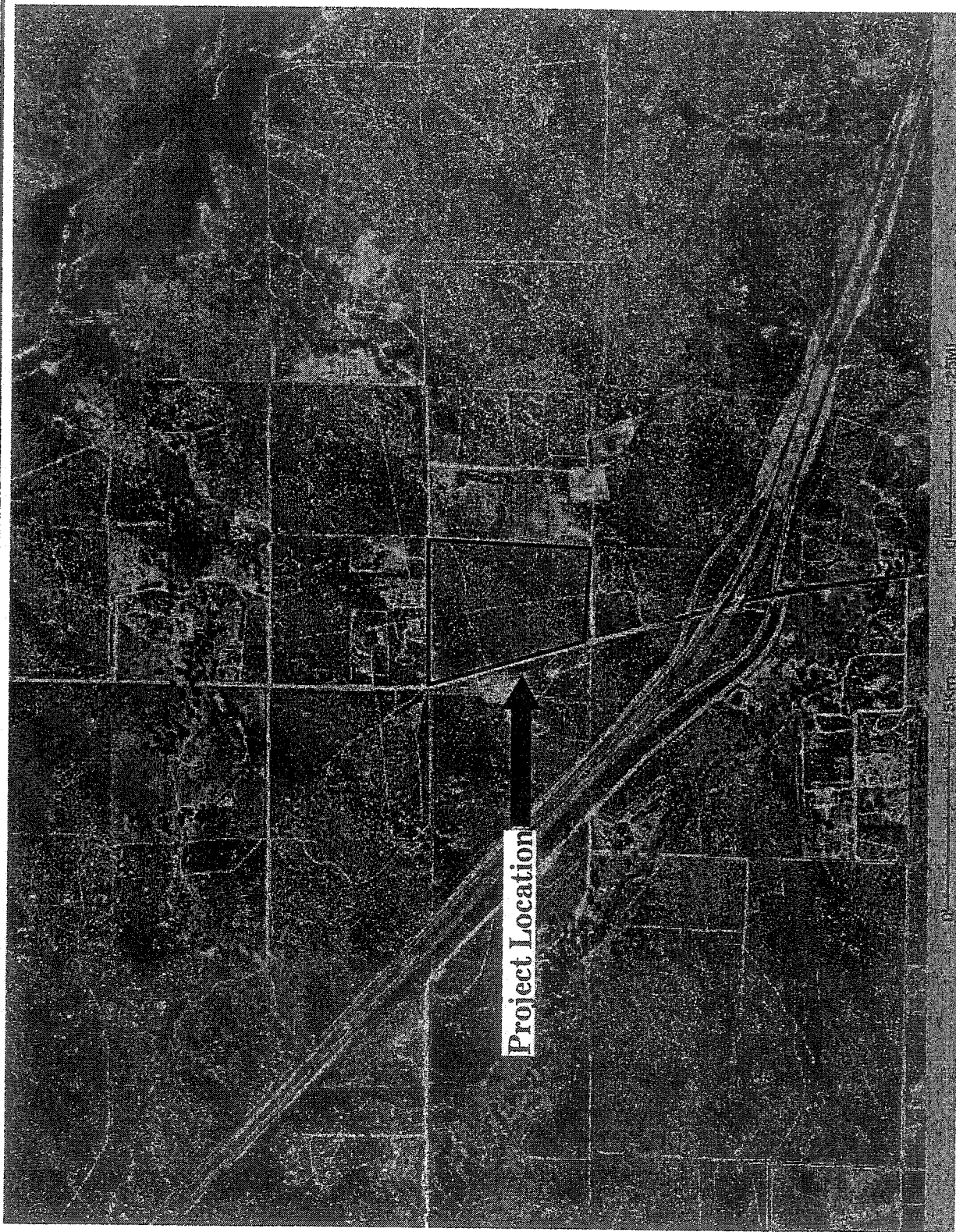
Reference Layers



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Assessor's Parcel Map

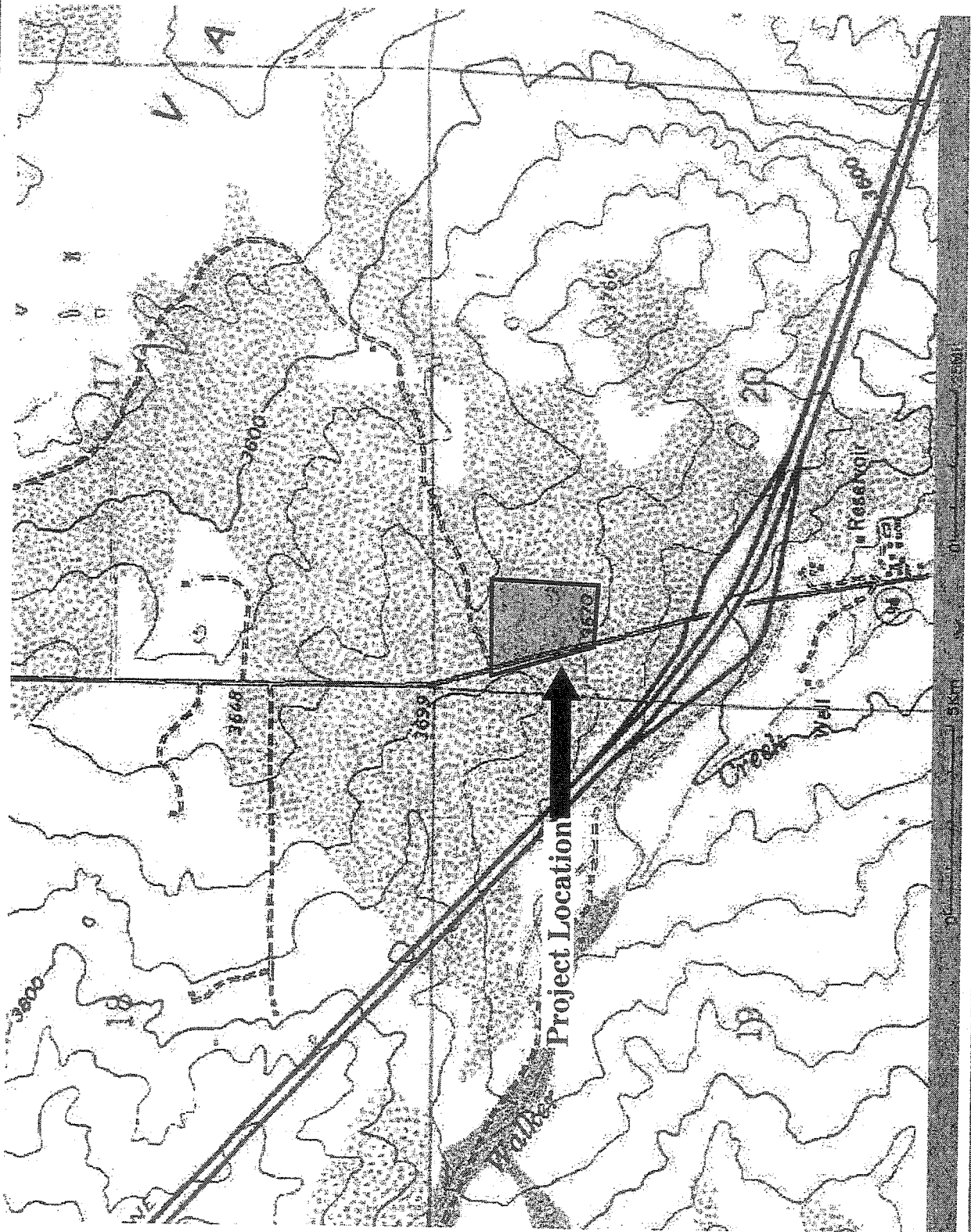
Figure 2



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539 Encinitas Boulevard, Suite 206
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Satellite Aerial Photograph

Figure 3



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539 Encinitas Boulevard, Suite 206
Encinitas, California 92024
760-753-1865

Topographic Map

Figure 4

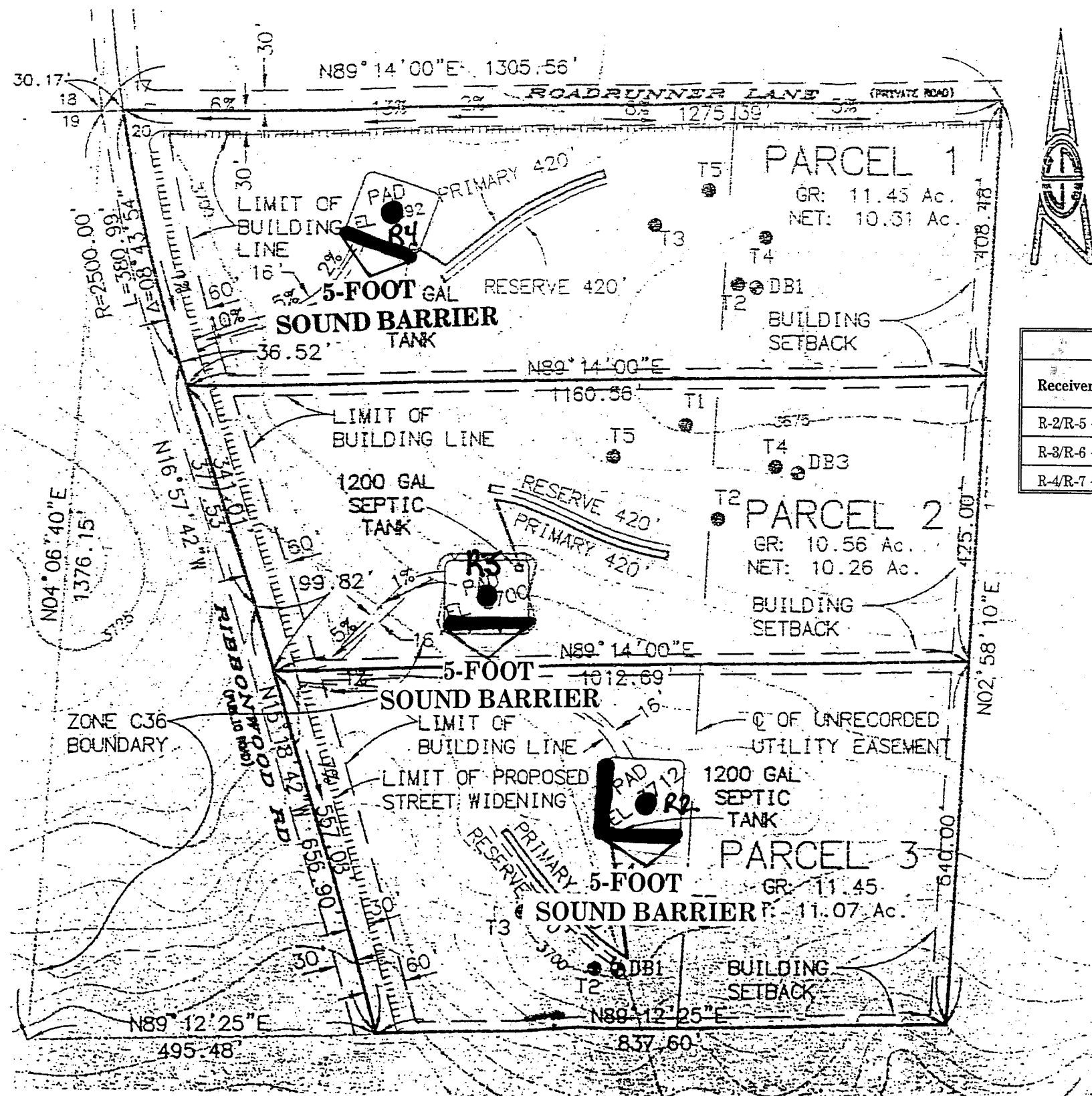
The map is a technical site plan for three parcels. Parcel 1 is at the top, Parcel 2 in the middle, and Parcel 3 at the bottom. Key features include:

- Parcel 1:** GR: 11.45 Ac., NET: 10.31 Ac. It contains a 1200 GAL SEPTIC TANK, a BUILDING SETBACK, and a LIMIT OF BUILDING LINE. A large 'X' is drawn over this parcel.
- Parcel 2:** GR: 10.56 Ac., NET: 10.33 Ac. It contains a 1200 GAL SEPTIC TANK, a BUILDING SETBACK, and a LIMIT OF BUILDING LINE. A large 'X' is drawn over this parcel.
- Parcel 3:** GR: 11.16 Ac., NET: 10.07 Ac. It contains a 1200 GAL SEPTIC TANK, a BUILDING SETBACK, and a LIMIT OF BUILDING LINE. A large 'X' is drawn over this parcel.
- Other Features:** ROADRUNNER LANE (PRIVATE ROAD) at the top, ZONE C36 BOUNDARY on the left, and MEASUREMENT LOCATION at the bottom. The map includes various survey points (T1, T2, T3, T4, T5), elevations (EL 3700, EL 3712), and bearings (N89°14'00"E, N04°06'40"E, etc.).

TENTATIVE PARCEL MAP SHOWING FUTURE TRAFFIC NOISE CONTOUR AND MEASUREMENT LOCATION

REVISED TENTATIVE PARCEL MAP AND PRELIMINARY GRADING PLAN

TENTATIVE PARCEL MAP NO. 20675



Future Exterior CNEL			
Receiver Location	Unmitigated CNEL 1 st Floor/2nd Floor	Barrier Height	Mitigated CNEL 1 st Floor/2nd Floor
R-2/R-5 ~ Parcel 3	61.8/61.8	5 feet	58.2/61.4
R-3/R-6 ~ Parcel 2	61.3/61.4	5 feet	59.9/61.1
R-4/R-7 ~ Parcel 1	60.4/60.4	5 feet	58.8/60.3

TENTATIVE PARCEL MAP SHOWING RECEIVER LOCATIONS AND PROPOSED SOUND ATTENUATION BARRIERS

FIGURE 6

APPENDIX A

Sound32 Data and Results

Sound32 Data and Results

Boulevard

On-Site Noise Measurement Conditions and Results	
Date	Monday, May 19, 2003
Time	6:40 a.m. to 6:55 a.m.
Conditions	60° F, Sunny and Clear Skies, No Breeze
Measured Noise Level	54.9 dBA Leq

Traffic Count During On-Site Noise Measurement						
Roadway		Duration	Autos	Medium	Heavy	Totals
Interstate 8 (4 Lanes)	Measured	15 Min.	99	4	16	119
	Overall	60 Min.	396	16	64	476

Noise Level Comparison Using Traffic Model versus On-Site Noise Measurement				
Roadway	Model	Measured	Difference	Correction
Interstate 8 (4 Lanes)	55.3 dBA Leq	54.9 dBA Leq	0.4 dB	None Applied

Current Traffic Reference Information

Interstate 8
Caltrans - District 11; Division of Traffic Forecasting
Carlena Darrieulat; Transportation Planner; (619)220-7345
2002 Traffic Volumes on California Highways, District 11

Ribbonwood Road
Nick Ortiz; Associate Transportation Specialist; 858-495-5488
County of San Diego Public Works Department
2002 Traffic Census

Future Projected Traffic Study

Interstate 8

Caltrans - District 11; Division of Traffic Forecasting

Carlena Darrieulat; Transportation Planner; (619)220-7345

2025 Future Traffic Projections based on SANDAG GIS

Ribbonwood Road

Nick Ortiz; Associate Transportation Specialist; 858-495-5488

County of San Diego Public Works Department

SANDAG Series 9 2020 Model

Overall Traffic Information				
ROADWAY NAME	SPEED LIMIT (miles per hour)		CURRENT ADT (average daily trips)	FUTURE (2020) ADT (average daily trips)
	Current	Future		
Interstate 8	65 MPH	65 MPH	13,500 ADT	25,500 ADT
Ribbonwood Road	50 MPH	50 MPH	1,000 ADT	8,000 ADT

Future (2020) Traffic Conditions					
Roadway Name	Condition	Total %	Autos (Hourly)	Medium (Hourly)	Heavy (Hourly)
		ADT			
Interstate 8	Future	100	87.0%	4.0%	9.0%
		25,500	1286	59	133
Ribbonwood Road	Future	100	94.0%	5.0%	1.0%
		8,000	436	23	4

SOUND32 PROGRAM DATA FOR CALTRANS VERSION OF STAMINA2/OPTIMA

Calculated versus Measured On-Site Traffic Noise Data

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : MEAS.TXT
BARRIER COST FILE : CALIF\$.DTA
DATE : 06-05-2003

Boulevard

=====

TRAFFIC DATA

LANE NO.	AUTO		MEDIUM TRKS		HEAVY TRKS		DESCRIPTION
	VPH	MPH	VPH	MPH	VPH	MPH	
1	198	65	8	55	32	55	I-8 Eastbound
2	198	65	8	55	32	55	I-8 Westbound

=====

LANE DATA

LANE SEG. GRADE			SEGMENT		
NO.	NO.	COR.	X	Y	Z DESCRIPTION
1	1	YES	-4687.5	3612.5	3914.0 L1 P1
	2	YES	-162.5	-662.5	3670.0 L1 P2
	3	YES	762.5	-1300.0	3621.6 L1 P3
	4	YES	2062.5	-1812.5	3609.0 L1 P4
			5087.5	-2812.5	3502.0 L1 P5
2	1	YES	-4687.5	3800.0	3922.0 L2 P1
	2	YES	-162.5	-450.0	3678.0 L2 P2
	3	YES	712.5	-1112.5	3629.6 L2 P3
	4	YES	2062.5	-1687.5	3618.0 L2 P4
			5087.5	-2662.5	3516.0 L2 P5

=====

BARRIER DATA

Barrier No. 1 Description: I-8 Berm
Type - (1)BERM
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS

1	-4500.0	3750.0	3692.0	3952.0	*B1 P1	* %260
	-300.0	-87.5	3600.0	3710.0	*B1 P2	* %110

Barrier No. 2 Description: I-8 Berm
Type - (1)BERM
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS	
1	-300.0	-87.5	3600.0	3710.0	*B2 P1	* %110
	617.5	-925.0	3600.0	3630.0	*B2 P2	* 30

Barrier No. 3 Description: I-8 Berm
Type - (1)BERM
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS	
1	702.5	-1037.5	3600.0	3630.0	*B3 P1	* 30
	5750.0	-2775.5	3502.0	3692.0	*B3 P2	* %190

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	812.0	0.0	3705.0	67	500	meas

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	meas	67.	500.	55.3

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.0 DBA

Future Traffic Without Proposed Buildings to Produce Noise Contours

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : FUTCON.TXT
BARRIER COST FILE : CALIF\$.DTA
DATE : 09-15-2003

Boulevard

=====

TRAFFIC DATA

LANE NO.	AUTO		MEDIUM TRKS		HEAVY TRKS		DESCRIPTION
	VPH	MPH	VPH	MPH	VPH	MPH	
1	643	65	30	55	67	55	I-8 Eastbound
2	643	65	30	55	67	55	I-8 Westbound
3	436	50	23	50	4	50	Ribbonwood

=====

LANE DATA

LANE SEG. GRADE			SEGMENT			
NO.	NO.	COR.	X	Y	Z	DESCRIPTION
1	1	YES	-4687.5	3612.5	3914.0	L1 P1
	2	YES	-162.5	-662.5	3670.0	L1 P2
	3	YES	762.5	-1300.0	3621.6	L1 P3
	4	YES	2062.5	-1812.5	3609.0	L1 P4
			5087.5	-2812.5	3502.0	L1 P5
2	1	YES	-4687.5	3800.0	3922.0	L2 P1
	2	YES	-162.5	-450.0	3678.0	L2 P2
	3	YES	712.5	-1112.5	3629.6	L2 P3
	4	YES	2062.5	-1687.5	3618.0	L2 P4
			5087.5	-2662.5	3516.0	L2 P5
3	1	YES	12.5	2737.5	3660.0	L3 P1
	2	YES	12.5	1337.5	3715.0	L3 P2
			712.5	-1187.5	3600.0	L3 P3

=====

BARRIER DATA

Barrier No. 1 Description: I-8 Berm
Type - (1)BERM
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	-4500.0	3750.0	3692.0	3952.0 *B1 P1	* %260
	-300.0	-87.5	3600.0	3710.0 *B1 P2	* %110

Barrier No. 2 Description: I-8 Berm
Type - (1)BERM
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	-300.0	-87.5	3600.0	3710.0 *B2 P1	* %110
	617.5	-925.0	3600.0	3630.0 *B2 P2	* 30

Barrier No. 3 Description: I-8 Berm
Type - (1)BERM
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	702.5	-1037.5	3600.0	3630.0 *B3 P1	* 30
	5750.0	-2775.5	3502.0	3692.0 *B3 P2	* %190

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	812.0	0.0	3705.0	67	500	meas
2	763.0	338.0	3725.0	67	500	R-2
3	575.0	613.0	3705.0	67	500	R-3
4	450.0	1200.0	3705.0	67	500	R-4
5	963.0	338.0	3725.0	67	500	R-5
6	775.0	613.0	3705.0	67	500	R-6
7	650.0	1200.0	3705.0	67	500	R-7

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
1	meas	67.	500.	61.3
2	R-2	67.	500.	59.8
3	R-3	67.	500.	59.3
4	R-4	67.	500.	58.4
5	R-5	67.	500.	58.7
6	R-6	67.	500.	57.7

7 R-7 67. 500. 56.6

=====

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

=====

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.0 DBA

=====

Future Traffic Without Buildings and With Mitigation for Ext Noise Levels

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : FUTMIT.TXT
BARRIER COST FILE : CALIF\$.DTA
DATE : 09-15-2003

Boulevard

=====

TRAFFIC DATA

LANE NO.	AUTO VPH	MPH	MEDIUM TRKS VPH	MPH	HEAVY TRKS VPH	MPH	DESCRIPTION
1	643	65	30	55	67	55	I-8 Eastbound
2	643	65	30	55	67	55	I-8 Westbound
3	436	50	23	50	4	50	Ribbonwood

=====

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	YES	-4687.5	3612.5	3914.0	L1 P1
	2	YES	-162.5	-662.5	3670.0	L1 P2
	3	YES	762.5	-1300.0	3621.6	L1 P3
	4	YES	2062.5	-1812.5	3609.0	L1 P4
			5087.5	-2812.5	3502.0	L1 P5
2	1	YES	-4687.5	3800.0	3922.0	L2 P1
	2	YES	-162.5	-450.0	3678.0	L2 P2
	3	YES	712.5	-1112.5	3629.6	L2 P3
	4	YES	2062.5	-1687.5	3618.0	L2 P4
			5087.5	-2662.5	3516.0	L2 P5
3	1	YES	12.5	2737.5	3660.0	L3 P1
	2	YES	12.5	1337.5	3715.0	L3 P2
			712.5	-1187.5	3600.0	L3 P3

=====

BARRIER DATA

Barrier No. 1 Description: I-8 Berm
Type - (1)BERM
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
------	---	---	-------------	---------	-------------------------

1	-4500.0	3750.0	3692.0	3952.0	*B1 P1	* %260
	-300.0	-87.5	3600.0	3710.0	*B1 P2	* %110

Barrier No. 2 Description: I-8 Berm
Type - (1)BERM
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	-300.0	-87.5	3600.0	3710.0	*B2 P1 * %110
	617.5	-925.0	3600.0	3630.0	*B2 P2 * 30

Barrier No. 3 Description: I-8 Berm
Type - (1)BERM
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	702.5	-1037.5	3600.0	3630.0	*B3 P1 * 30
	5750.0	-2775.5	3502.0	3692.0	*B3 P2 * %190

Barrier No. 4 Description: Parcel 3
Type - (2)MASONRY
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	715.5	398.0	3712.0	3717.0	*B4 P1 * 5
2	705.5	283.0	3712.0	3717.0	*B4 P2 * 5
	818.0	283.0	3712.0	3717.0	*B4 P3 * 5

Barrier No. 5 Description: Parcel 2
Type - (2)MASONRY
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS
1	512.5	565.5	3700.0	3705.0	*B5 P1 * 5
	635.0	565.5	3700.0	3705.0	*B5 P2 * 5

Barrier No. 6 Description: Parcel 1
Type - (2)MASONRY
Height Increment (DELZ)= 0.0 No. Height Changes (P)=0

SEG.	X	Y	GROUND (Z0)	TOP (Z)	BARRIER HEIGHTS AT ENDS	
1	380.0	1180.0	3692.0	3697.0	*B6 P1	* 5
	485.0	1145.0	3692.0	3697.0	*B6 P2	* 5

RECEIVER DATA

REC.

NO.	X	Y	Z	DNL	PEOPLE	ID
1	812.0	0.0	3705.0	67	500	meas
2	763.0	338.0	3717.0	67	500	P3
3	575.0	613.0	3705.0	67	500	P2
4	450.0	1200.0	3697.0	67	500	P1
5	763.0	338.0	3727.0	67	500	P3-2
6	575.0	613.0	3715.0	67	500	P2-2
7	450.0	1200.0	3707.0	67	500	P1-2

REC	REC ID	DNL	PEOPLE	LEQ(CAL)
-----	--------	-----	--------	----------

1	meas	67.	500.	61.2
2	P3	67.	500.	56.2
3	P2	67.	500.	57.9
4	P1	67.	500.	56.8
5	P3-2	67.	500.	59.4
6	P2-2	67.	500.	59.1
7	P1-2	67.	500.	58.3

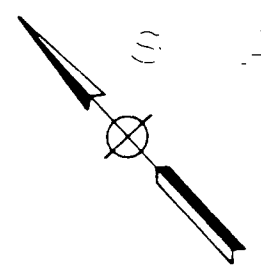
DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.0 DBA

APPENDIX B
Caltrans AsBuilt Plans for Interstate 8
and a SanGIS Satellite Aerial Photograph

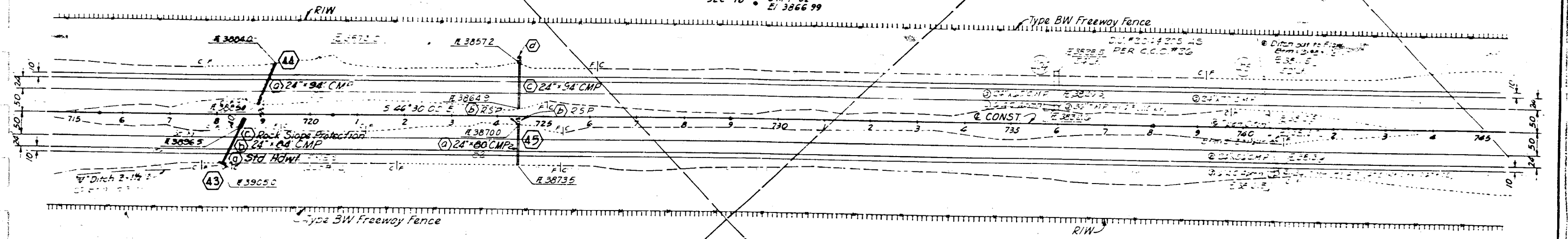


SAN DIEGO COUNTY
T. 17 S. R. 1 E. S. 1 & 2

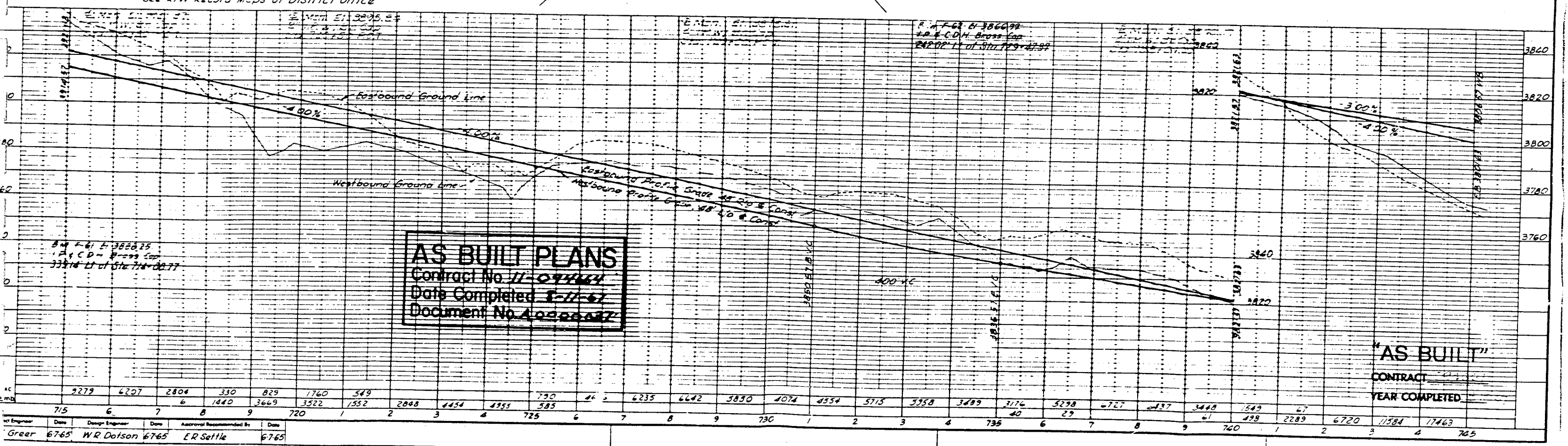
DIST	COUNTY	SECTION	DATE	TIME
11	SD	8	6.11/7664	12 99

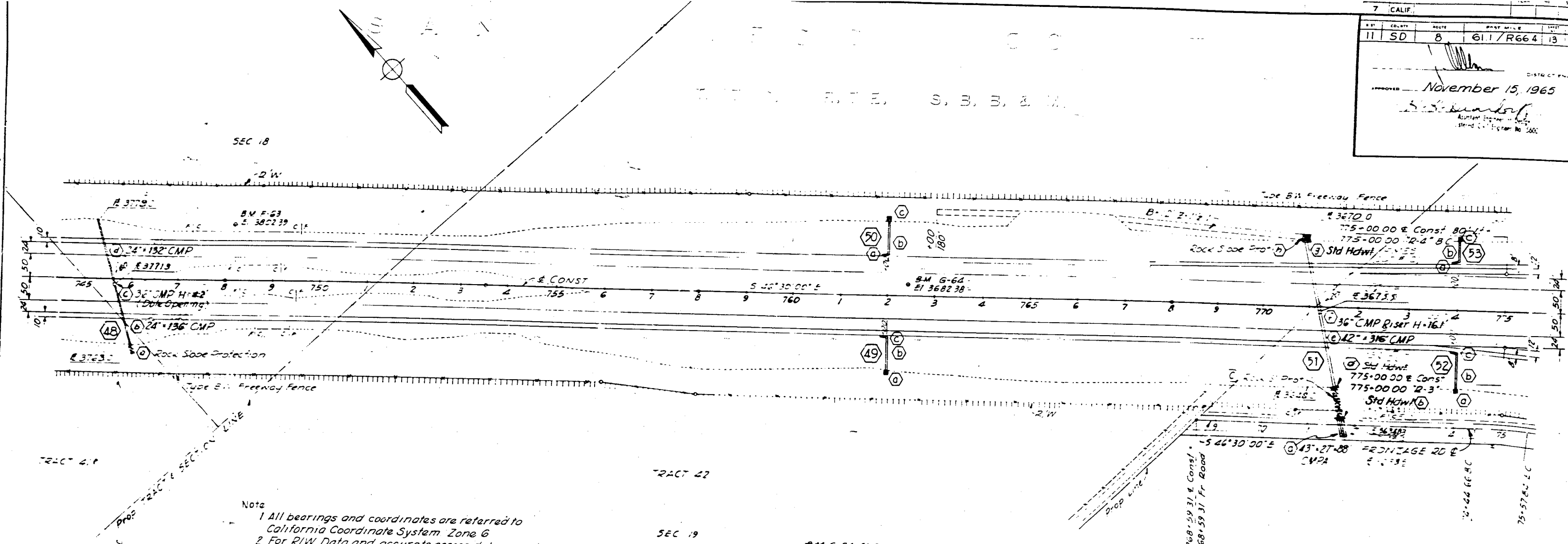
APPROVED: *[Signature]*
November 12, 1965

TRACT 39
SEC 18 • B.M. F-62
E1 3866 99



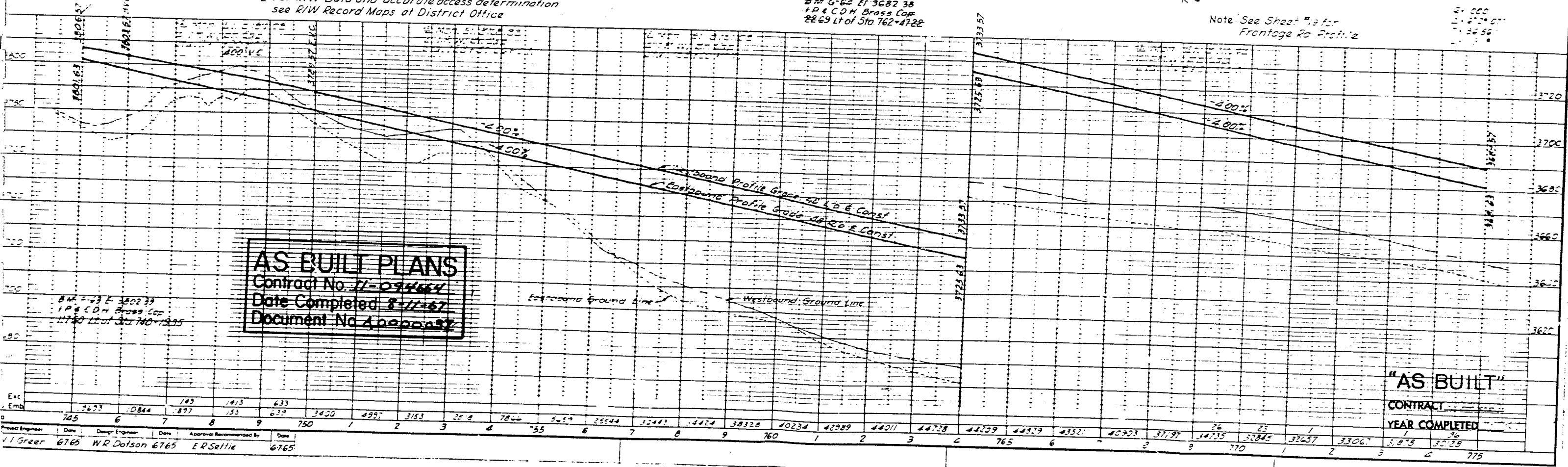
Note
1 All bearings and coordinates are referred to California Coordinate System Zone 6
2 For RIW Data and accurate access determination see RIW Record Maps at District Office





Note

- 1 All bearings and coordinates are referred to California Coordinate System Zone 6
- 2 For R/W Data and accurate access determination see R/W Record Maps at District Office



AS BUILT PLANS

Contract No. 11-094654

Date Completed 2-11-67

Document No. 40000082

"AS BUILT"

CONTRACT

YEAR COMPLETED

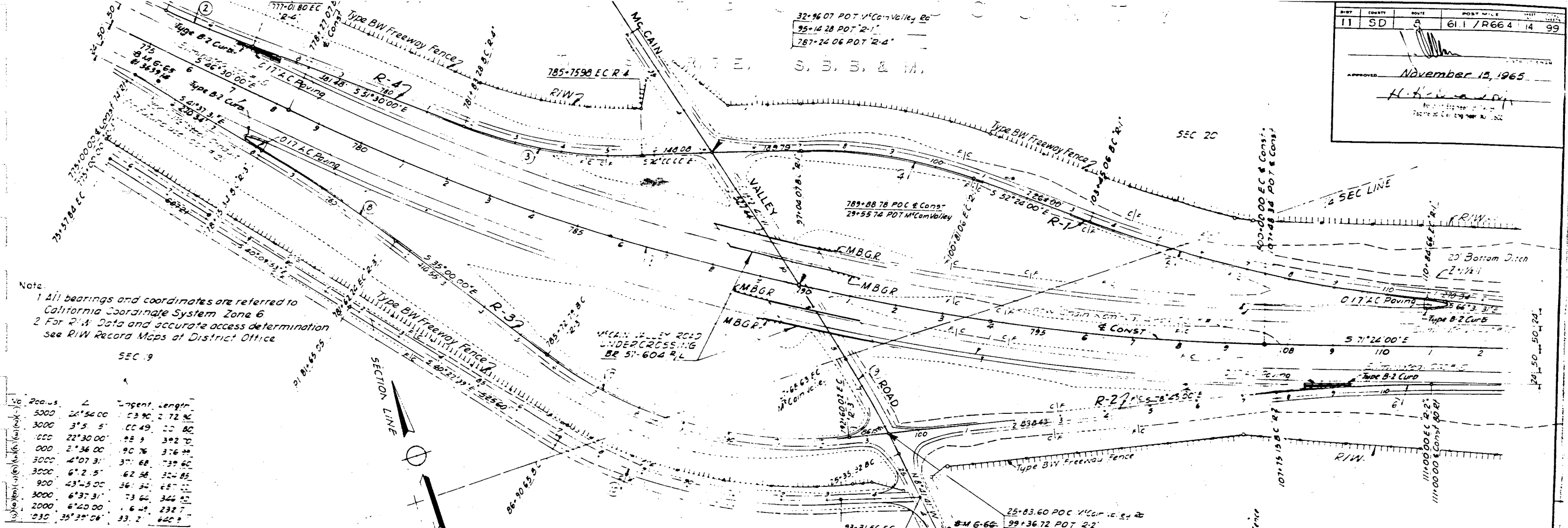
Project Engineer	Date	Design Engineer	Date	Approval Recommended By	Date
V. Greer	6765	W. R. Dolson	6765	E. S. Sellie	6765

DIST	COUNTY	ROUTE	POST MILE	DATE
11	SD	5	61.1 / R664	14 99

APPROVED November 12, 1965

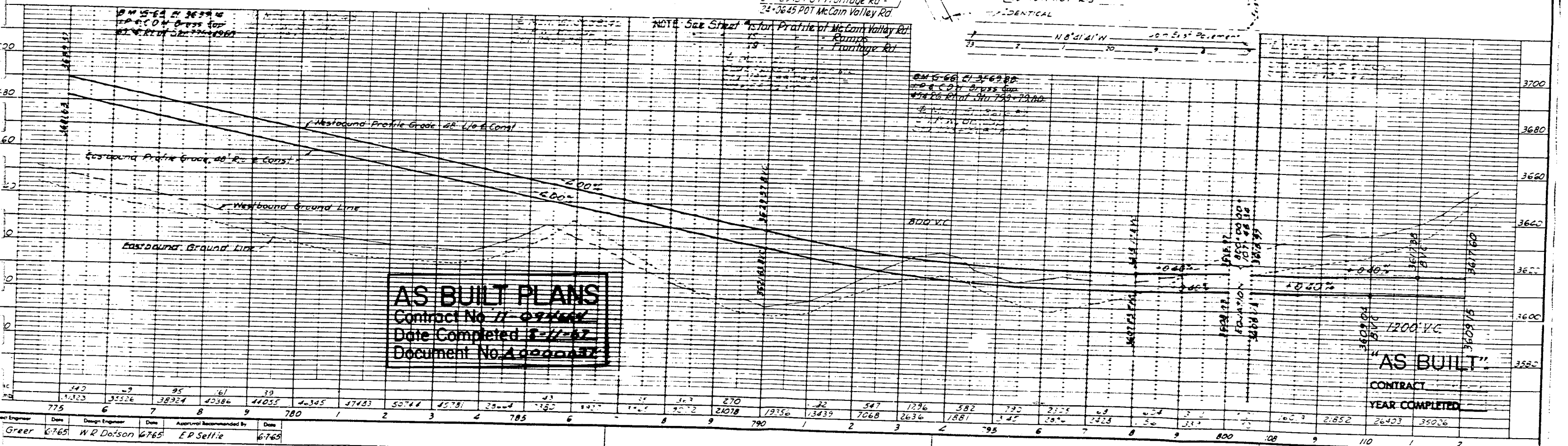
H. L. ...

... ..

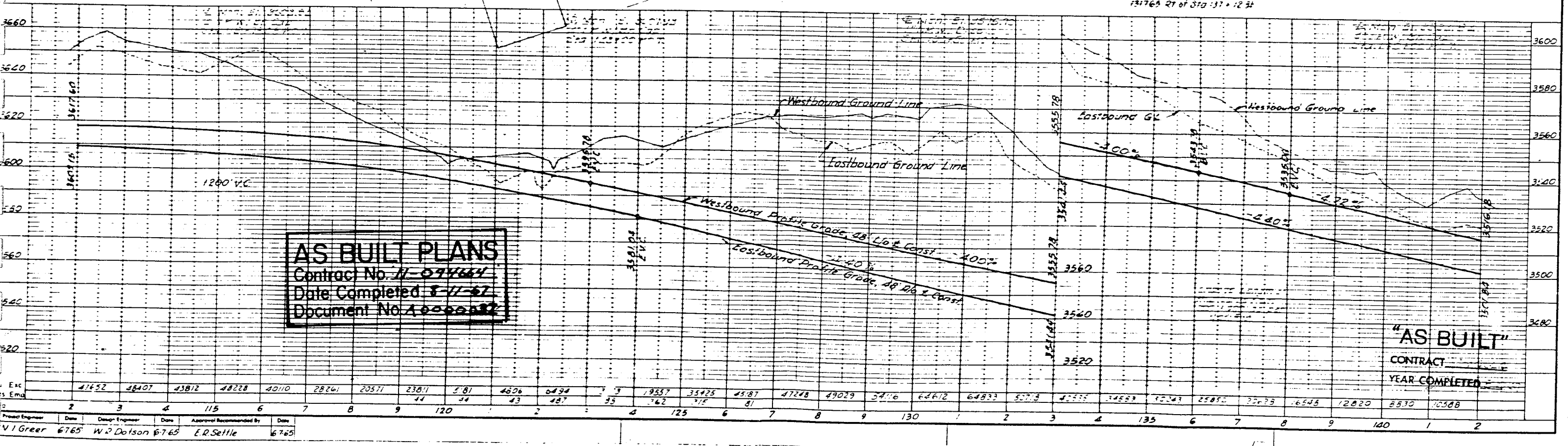


Note:
 1 All bearings and coordinates are referred to California Coordinate System Zone 6
 2 For R/W Data and accurate access determination see R/W Record Maps at District Office

Radius	Length	Chord	Angle
5000	26' 54.00"	53.90	2.72%
3000	3' 5.5"	60.49	2.00%
1000	22' 30.00"	88.9	3.92%
500	2' 36.00"	90.76	3.76%
3000	4' 07.31"	37.68	7.39%
3000	6' 2.5"	62.56	32.85%
900	43' 5.00"	36.34	65.11%
3000	6' 37.31"	73.66	346.12%
2000	6' 20.00"	1.6	232.7%
130	35' 35.08"	33.2	640.9%







Dist. Engineer	Date	Design Engineer	Date	Approval Recommended By	Date
Greer	6-7-65	W.R. Dofson	6-7-65	EP Selfie	6-7-65



SANGIS SATELLITE AERIAL PHOTOGRAPH

Legend

-  Freeways
-  Roads
-  Parcels
-  40 Foot Contours

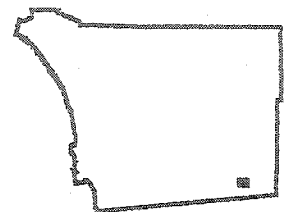
PROJECT SITE



1:9000

1" = 750'

Vicinity Map



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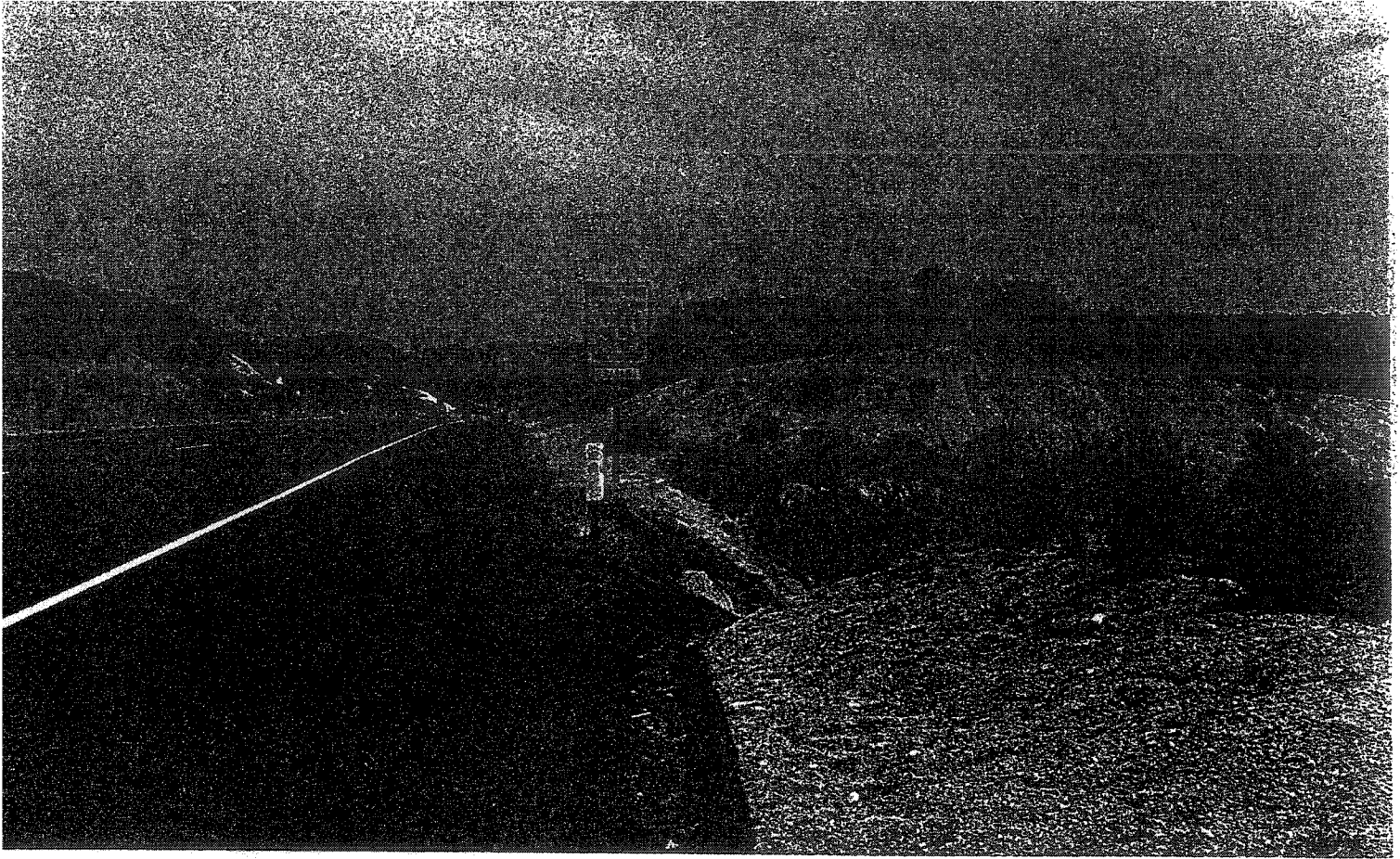
Plot Date: 3/26/03

APPENDIX C
Interstate 8 Truck Speed Limit Documentation

⊗ West Bound Truck Speed
Sign 55 MPH

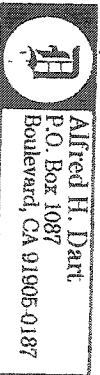
⊗ East Bound Truck Spd 55 MPH

PROJECT SITE



EAST BOUND TRUCK SPEED
Sign - See MAP
.3 mile East of 94 Inter-
Section.

Project A30306
TPM 20675



APPENDIX D
Biological Resources Survey Report

**A BIOLOGICAL RESOURCES SURVEY REPORT
FOR THE
DART TENTATIVE PARCEL MAP PROJECT
TPM 20657, LOG No. 02-21-004
APN 612-21-05
COUNTY OF SAN DIEGO**

Prepared for

Mr. Alfred Dart
P.O. Box 1087
Boulevard, CA 91905

Prepared by

Vincent N. Scheidt
Certified Biological Consultant
3158 Occidental Street
San Diego, CA 92122
(858) 457-3873

August 2003



Vincent N. Scheidt, MA
Certified Biological Consultant

TOPO! map printed on 08/20/03 from "SanDiego.tpo" and "Untitled.tpg"
116°18'00" W WGS84 116°17'00" W



INTRODUCTION

This report addresses biological resources, project impacts, and RPO/CEQA (Resource Protection Ordinance/California Environmental Quality Act) compatibility for the proposed Dart Tentative Parcel Map project. The project involves an approximately 33.5-acre parcel of vacant land located off Ribbonwood Road and Roadrunner Lane in the Boulevard area of unincorporated San Diego County (Figure 1).

PROJECT AND SITE DESCRIPTION

Approval of the Dart TPM project would result in the creation of three new legal parcels ranging in size between 10.56 and 11.45 gross acres each. Three dwelling units would presumably be built; one on each new parcel, although this application does not include any proposed grading or site improvements. Primary access to the property would be from the west, off Ribbonwood Road.

The project site is undeveloped, supporting areas of open desert transition chaparral vegetation. Elevations onsite range between approximately 3,675 feet MSL near the site's southwestern corner and 3,775 site's feet MSL at the site's highest point at the southeastern corner. The soil-type found onsite consist of La Posta Loamy Course Sand on slopes between 5 and 30 percent (LaE2). This soil-type is not known to support significant populations of narrow endemics or other very rare plants or animals.

The Dart TPM property is located in a rural part of San Diego County, although there are several homes in the vicinity, including homes on adjoining parcels to the north, west, and east. Other areas in the vicinity of the property support similar habitats including desert scrub and chaparral, oak woodlands, and development. The only habitats that adjoin the property, however, are chaparral and development.

PURPOSE OF STUDY

The purpose of this study was to inventory the property for biological resources, identify and map all onsite habitats, and search for signs of rare, endangered, threatened, or otherwise sensitive plants or animals which are known from the area, and which could occur here. These data were used in an assessment of biological resource values. This analysis allows a determination of project-related direct and indirect impacts, as required by the CEQA and the RPO, and mitigation, if appropriate and necessary. It is expected that the development of the property and associated improvements will result in measurable losses of biological resource values, necessitating mitigation.

METHODS

Field surveys of the Dart TPM property were completed in July of 2001 and March and April of 2003. The specific dates, personnel, and weather conditions are presented in Table 1. Investigators included the author (VS) and Shannon M. Allen, Biological Consultant (SA).

Table 1. Field Surveys – The Dart TPM Project Site

<u>Date</u>	<u>Hours</u>	<u>Personnel</u>	<u>Conditions</u>
30 July '01	08:30-10:30	VS, SA	clear, temps in the mid 80's, SW winds 0-5 MPH
19 March '03	09:15–11:15	VS, SA	clear, sunny, temps high 50°s/low 60°s, SW winds 0-2 MPH
25 March '03	09:00–11:00	VS, SA	clear, sunny, temps mid 60°s/low 70°s, E winds 6-10 MPH
3 April '03	09:00-11:00	VS, SA	clear, temps low 60°s, SW winds 0-10 MPH
11 April '03	08:30-10:30	VS, SA	clear, temps low 60°s, W winds 0-9 MPH
19 April '03	09:30-11:30	VS, SA	clear, temps mid 60°s, NE winds 0-7 MPH

All plants, animals and habitats encountered during the survey periods were noted in the field. The limits of each habitat-type were mapped in the field utilizing an aerial photograph of the property. All plants and animals identified in association with the property are listed in Table 2 at the end of this report. Plants were identified *in situ*, or based on characteristic floral parts collected and later examined in detail. Floral nomenclature used in this letter follows Hickman (1993) and others. Plant communities, as designated by numerical code, follow Holland (1996, as amended).

Wildlife observations were made opportunistically. Binoculars were used to aid in observations and all wildlife species detected were noted. Animal nomenclature used in this report is taken from Stebbins (1985) for reptiles and amphibians, American Ornithologist's Union (1983, as updated) for birds, and Jones, et. al (1992) for mammals.

Several directed field surveys and habitat evaluations were conducted in conjunction with the biological study of this property. These included a directed Quino Checkerspot Butterfly Flight Season survey and habitat evaluations for various other sensitive species known from the vicinity. The various directed surveys followed approved protocols to maximize detection of the respective biological resources, if present.

RESULTS

Habitats

The Dart TPM project site supports two relatively discrete plant associations. These are (1) Semi-desert Chaparral (Holland Code #37400) and (2) Urban/Developed habitat (Holland Code #12000) at the periphery. The approximate configuration of each of the onsite habitats is shown in Figure 2.

Semi-desert Chaparral (Holland Code 37120) – 27.9 acres

Nearly one hundred percent of the property supports mature Semi-desert Chaparral vegetation. This community is indicated by large, hard-woody shrubs, including Red-shanks (*Adenostoma sparsifolium*), Chamise (*A. fasciculatum*), Mexican Manzanita (*Arctostaphylos pungens*), Silk-tassel (*Garrya*), Buckbrush Ceanothus (*Ceanothus cuneatus*), and others. Also present in open areas are soft-woody species, such as Great Basin Sagebrush (*Artemisia tridentata*) and Flat-top Buckwheat (*Eriogonum fasciculatum*). Herbaceous and shrub understory species observed include Mariposa Lily (*Calochortus* sp.), Fimbriate Spineflower (*Chorizanthe fimbriata*), and California Peony (*Paeonia californica*).

Urban/Developed (Holland Code 12000) – 5.6 acres

Urban/Developed Habitat is found around the periphery of the property and in association with developed parcels in the vicinity. Weedy species are present along the road shoulders, including Annual Burweed (*Ambrosia acanthicarpa*), Tansy Mustard (*Descurainia pinnata*), and Ripgut and Cheat Brome (*Bromus diandrus*, *B. tectorum*). Surrounding the property are scattered homes and open areas.

Plants

Seventy-two species of vascular plants were detected on the Dart TPM property. The plant species observed typify the diversity normally found in Semi-desert Chaparral and disturbed areas in the interior areas of San Diego County. A complete list of the plants detected, listed alphabetically, can be found in Table 2, attached. This list would be expected to represent at least 90 percent of the naturalized plants occurring on this site. Two of the plants observed are considered sensitive in San Diego County. These are Jacumba Milk-vetch and Desert Beauty. These are discussed subsequently.

Animals

Twenty-nine species of animals were observed using the project site. These are generally common species, abundant in the site's general vicinity. Animals observed onsite are listed in Table 2, attached. Three of the animals observed are considered sensitive in San Diego County. These are San Diego Coast Horned Lizard, Coastal Western Whiptail, and Turkey Vulture. Each of these is discussed subsequently.

SENSITIVE RESOURCES

Sensitive Vegetation Communities

Vegetation communities (habitats) are generally considered "sensitive" if: (a) they are recognized by the County's Resource Protection Ordinance as being generally depleted; (b) they are considered rare within the region by local experts, (c) if they are known to support sensitive animal or plant species; and/or (d) they are known to serve as important wildlife corridors. These sensitive habitats are typically depleted throughout their known ranges, or are highly localized and/or fragmented.

The Semi-desert Chaparral on the Dart TPM site is considered sensitive insofar as it supports several sensitive species. However, this community is locally not depleted, with extensive stands in the undeveloped transmontane areas of the County. As a habitat-type, *per se*, Semi-desert Chaparral is not considered a sensitive biological resource.

Sensitive Plants

Two species of sensitive plants were observed on the Dart TPM property during the field surveys. These are Jacumba Milk-vetch (*Astragalus douglasii* var. *perstrictus*), and Desert Beauty (*Linanthus bellus*). These are discussed below. Sensitive plants are those listed as "Rare", "Endangered", "Threatened", "of Special Concern", or otherwise considered noteworthy by the Natural Community Conservation Program, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, the California Native Plant Society (CNPS), or other conservation agencies, organizations, or local botanists.

Jacumba Milk-vetch

Astragalus douglasii var. *perstrictus*

Status: CNPS RED code: 2-2-2, List 1B

Federal Status: "Species of Concern"

"Sensitive Plant" (County of San Diego, 1995)

Distribution: Interior areas of San Diego and Imperial Counties, and adjacent Baja California, Mexico. Reported localities in San Diego County include Cameron Corners, Buckman Springs, Bankhead Springs, Campo, Tierra del Sol, and Manzanita, McCain Valley, and Jacumba.

Habitat(s): Occurs in open desert scrub and chaparral, often in association with light soil disturbance, which scarifies the seed. Frequently seen along old dirt roads and tracks, and relatively common along the shoulders of Old Highway 80.

Status On Site: Approximately 40 individual specimens occur onsite, nearly all restricted to the brushed area along the site's southwestern edge (Figure 2). The brushing of this area appears to not have adversely impacted this species, and may be responsible for allowing specimens to germinate and grow.

Desert Beauty

Linanthus bellus

Status: CNPS RED code: 2-2-1, List 2

"Sensitive Plant" (County of San Diego, 1995)

Distribution: Interior areas of San Diego County and adjacent Baja California, Mexico. Reported localities in San Diego County include Tierra Del Sol, Jacumba, McCain Valley, Live Oak Springs, Boulevard, and others.

Habitat(s): Occurs on open, high desert sands, often in large numbers after a good winter rainfall.

Status On Site: Hundreds to thousands of specimens observed onsite over most of the property. This low annual is well distributed onsite in sandy openings.

Comments: As an annual, numbers vary from year to year, depending on rainfall. Relatively common in the vicinity of this property.

A variety of other sensitive plants is known from the general vicinity of the property. These are listed in Table 4. A few of these have a potential to occur onsite. As discussed previously, the soil-types associated with this property do not normally support large numbers of endemic plant species.

Sensitive Animals

Three sensitive animals were detected on the subject property during the field surveys. These are San Diego Coast Horned Lizard (*Phrynosoma coronatum blainvillei*), Coastal Western Whiptail (*Cnemidophorus tigris multiscutatus*), and Turkey Vulture (*Cathartes aura*). Sensitive animals are those listed as "Rare", "Endangered", "Threatened", "of Special Concern" or otherwise noteworthy by the California Department of Fish and Game, the U.S. Fish and Wildlife Service, the National Audubon Society, the County of San Diego, or other conservation agencies, organizations, or local zoologists.

San Diego Horned Lizard

Phrynosoma coronatum blainvillei

Status: "Species of Concern" (USFWS, 1998)

"California Species of Special Concern" (CDFG, 1994)

Federal Status: "Species of Concern"

Sensitive Reptile List (County of San Diego, 1994)

Distribution: Ventura County south into northern Baja California Norte. Specimens found from sea level to mountain elevations and down desert slopes to the edge of the low desert.

Habitat(s): Open sage scrub, grassland, forested areas and chaparral.

Status onsite: A single juvenile specimen was observed onsite near the northern property edge.

Comments: This cryptic species is probably relatively common onsite, and relatively common in the vicinity of this property.

Coastal Western Whiptail

Cnemidophorus tigris multiscutatus

Status: Federal: Former Endangered Species Candidate, Category C2

Federal Status: "Species of Concern"

State status: none

Sensitive Reptile List (County of San Diego, 1994)

Distribution: Cismontane areas of California from the Mexican Border to near central California

Habitat(s): Open areas in a variety of habitats, such as chaparral, sage scrub, desert scrub. Requires open areas and friable soils.

Status On Site: Three specimens observed onsite in open areas of chaparral. Clearly well distributed on this property, and common in the vicinity of this property.

Turkey Vulture

Cathartes aura

Status: "Blue-list" (Tate, 1986)

"Declining" (Unitt, 1984)

Sensitive Bird List (County of San Diego, 1994)

Distribution: Ranges from southern Canada to Argentina.

Habitat(s): Open areas, farmlands, and grasslands. Usually seen soaring overhead or perched on poles, dead trees, or on the ground

Status onsite: Single specimen observed soaring over the property and adjacent lands.

Nesting habitat not present onsite, therefore not anticipated as a nesting species

Other sensitive animals known from the general vicinity of the property are listed in Table 4. A few of these probably occur onsite, at least on an occasional basis, particularly certain wide-ranging foragers, such as various species of rare bats, various raptors, certain other rare reptiles etc.

Quino Checkerspot Butterfly Flight Season Survey

Quino Checkerspot Butterfly (*Euphydryas editha quino*), a federally-listed Endangered Butterfly, is known from habitat similar to that found on the subject site. A directed Flight Season Survey for Quino Checkerspot Butterfly was conducted as a part of the analysis for this report in the March and April of 2003 (Table 1). All field surveys followed the current (2002) survey protocol for this species pursuant to the requirements of our Federal ESA Section 10 (A) (1) (a) Recovery Permits for this species, # TE 87888133 and # TE 038065.

Eleven species of locally-common butterflies (Table 2) were detected during the surveys. However, Quino was not detected at any time during any of the fieldwork. As a result of this survey, it appears certain at this time that Quino does not occur in association with the subject property at this time.

PROJECT IMPACTS

Impacts to biological resources associated with the Dart TPM project are assessed as being either "significant" or "less than significant", as defined by CEQA. The determination of impact significance is based on one or all of the following criteria:

- have a substantial adverse effect on sensitive habitats, species, or raptor foraging or wildlife movement

--or--

- reduce the ability of the County to implement existing or future conservation programs

--or--

- are out of conformance with applicable ordinances, policies and habitat conservation plans

Anticipated impacts to habitats were calculated by determining the acreage of each habitat affected by the site development, including future grading, estimated brush clearing for fire protection and septic installation purposes, and home construction, as expected to occur in the future. These are summarized in Table 3.

Measurable direct impacts would result from the development of Dart TPM project site. Direct impacts result from the actual removal of habitat, plants, and animals from the site through grading and brushing clearing or thinning for fire protection purposes, agriculture, etc. These direct impacts are considered permanent, because they result in a conversion of habitats to landscaped areas, structures, groves, roads, etc. Indirect impacts also affect plants, animals, and habitats that occur on or near the project site. These are not the direct result of grading or development. Examples of indirect impacts include introduction of exotic species, human or pet intrusions into natural areas, lighting, traffic, and noise. Indirect impacts are often called "edge effects".

An impact analysis associated with the various onsite habitats is presented in tabular format in Table 3. This analysis assumes full site utilization as the parcels are developed in the future.

Direct Impacts

Future development of the Dart TPM project site, as presently proposed, could result in the direct impacts that follow. The numbers below were derived by calculating the acreage of the proposed roads, driveways, leach fields, pads, and fire clearing requirements (100' from outer edge of pad):

- (1) Up to 27.9 acres of Semi-desert Chaparral could be impacted as a result of site development. The loss of this habitat is considered **significant**, as defined by CEQA. Mitigation for this loss is required under CEQA and the RPO.

- (2) Impacts to Urban/Developed Habitat are considered **less than significant**, as defined by CEQA and the RPO. Mitigation for this loss is not required.
- (3) Development will result in the direct loss of occupied foraging habitat for several species of sensitive plants and animals, including Jacumba Milk-vetch, Desert Beauty, San Diego Coast Horned Lizard, Coastal Western Whiptail, and Turkey Vulture. Also lost will be habitat presumably supporting various other sensitive species. The loss of sensitive species in the aggregate is considered **significant**, as defined by CEQA. However, habitat-based mitigation will be provided for this impact (indirectly) through protection of native vegetation that theoretically supports these species.

Indirect Impacts

Indirect impacts resulting from changes in land use are anticipated. These are primarily edge effects impacting natural areas and adjoining offsite areas. The uses of trails through and along open space areas are one type of edge effect. Indirect impacts associated with site development (primarily edge effects due to fragmentation of the habitat) are considered **less than significant**. This is because most areas surrounding the site are currently developed in a manner similar to that being proposed.

MITIGATION

Development of the Dart TPM property will result in a direct loss of sensitive habitat, as defined by CEQA and the RPO. Mitigation is thus required to ensure that there is no loss of sensitive habitat values or degradation of significant natural areas as a result of future site improvement.

In order to reduce project-related impacts to **Less than Significant**, and achieve adequate habitat-based mitigation, pursuant to the requirements of the CEQA and the RPO, it is recommended that the project applicants provide offsite mitigation at a ratio of ½-to-1 for the loss of approximately 27.9 acres of Semi-desert Chaparral vegetation. This would require the securement of no less than 14 acre-credits (@ ½-to-1) of the same type of habitat in a County-approved location in the Boulevard area. It is assumed that the selected mitigation site would support the same species as are found on this site, including Jacumba Milk-vetch, Desert Beauty, San Diego Coast Horned Lizard, Coastal Western Whiptail, and Turkey Vulture.

Alternatively, partial or full onsite mitigation credit could be obtained for all areas of Semi-desert Chaparral that would not be subject to future clearing, grading, or development. This would require placing a portion of the property into perpetual protection within a **Dedicated Biological Open Space Easement** intended to preclude the removal or addition of any thing, including structures and vegetation. The easement area would need to be fenced and/or otherwise clearly marked with high visibility markers (at 100-foot intervals) along its entire length to

discourage entry into the natural area. A second easement, which provides up to a 100-foot fire clearing structural setback from the edge of the biology open space easement, would need to be incorporated into the project design. This easement should prohibit the construction of structures that could require additional fire clearing, etc. The structural setback easement will preclude fire clearing which otherwise might encroach into the biology open space. In order to establish a biologically-viable onsite open space easement, the conceptual grading plans would need to be redesigned to move the proposed pads closer to Ribbonwood Road, with open space along the "back" of the lots. However, this is a less desirable alternative as the eastern portion of the property adjoins a developed property.

No other mitigation is proposed.

FIGURE 2. BIOLOGICAL RESOURCES – DART TPM PROPERTY, BOULEVARD

(see 200'-scale Vegetation Exhibit, attached)

TABLE 2. FLORA AND FAUNA DETECTED – DART TPM PROJECT

<u>Scientific Name</u>	<u>Common Name</u>
<u>Plants</u>	
<i>Adenostoma fasciculatum</i>	Chamise
<i>Adenostoma sparsifolium</i>	Red-shanks
<i>Ambrosia acanthicarpa</i>	Annual Burweed
<i>Arabis perennans</i>	Rock Cress
<i>Arctostaphylos pungens</i>	Mexican Manzanita
<i>Artemisia tridentata</i>	Great Basin Sagebrush
<i>Astragalus douglasii</i> var. <i>perstrictus</i>	Jacumba Milk-vetch
<i>Athysanus pusillus</i>	Athysanus
<i>Brassica geniculata</i> *	Perennial Mustard
<i>Bromus diandrus</i> *	Ripgut Brome
<i>Bromus rubens</i> *	Foxtail Brome
<i>Bromus tectorum</i> *	Cheat Brome
<i>Calochortus</i> sp.	Mariposa Lily
<i>Calyptridium monandrum</i>	Common Calyptridium
<i>Camissonia bistorta</i>	Southern Sun Cup
<i>Camissonia californica</i>	False Mustard
<i>Camissonia</i> sp.	Evening Primrose
<i>Caulanthus</i> sp.	Jewelflower
<i>Crassula erecta</i>	Stonecrop
<i>Ceanothus cuneatus</i>	Buckbrush Ceanothus
<i>Chamaesyce</i> sp.	Spurge
<i>Chorizanthe fimbriata</i>	Fimbriate Spineflower
<i>Corethrogyne filaginifolia</i> var. <i>virgata</i>	Sand Aster
<i>Cryptantha intermedia</i>	Common Cryptantha
<i>Cryptantha</i> sp.	Cryptantha
<i>Cuscuta ceanothi</i>	Chaparral Dodder
<i>Descurainia pinnata</i>	Tansy Mustard
<i>Dichelostemma pulchellum</i>	Blue Dicks
<i>Eriastrum</i> sp.	Eriastrum
<i>Eriogonum fasciculatum</i>	Flat-top Buckwheat
<i>Eriogonum</i> sp.	Buckwheat
<i>Eriophyllum confertiflorum</i>	Golden Yarrow

TABLE 2. FLORA AND FAUNA DETECTED - TPM 20657 (continued)

<u>Scientific Name</u>	<u>Common Name</u>
<u>Plants (continued)</u>	
<i>Erodium cicutarium</i> *	Red-stem Stork's-bill
<i>Erodium moschatum</i> *	White-stem Stork's-bill
<i>Eschscholzia californica</i>	California Poppy
<i>Festuca megalura</i> *	Foxtail Fescue
<i>Filago californica</i>	California Filago
<i>Galium andrewsii</i>	Prostrate Bedstraw
<i>Garrya</i> sp.	Silk-tassel
<i>Gilia</i> sp.	Gilia
<i>Gnaphalium canescens</i>	Cudweed
<i>Gutierrezia</i> sp.	Matchweed
<i>Hordeum murinum</i> *	Wild Barley
<i>Lasthenia coronaria</i>	Gold Fields
<i>Linanthus bellus</i>	Desert Beauty
<i>Lomatium uticulatum</i>	Lomatium
<i>Lotus scoparius</i>	Deerweed
<i>Lotus</i> sp.	Lotus
<i>Lupinus bicolor</i>	Bicolor Lupine
<i>Lupinus concinnus</i>	Bajada Lupine
<i>Marah macrocarpus</i>	Man Root
<i>Marrubium vulgare</i> *	Horehound
<i>Microseris</i> sp.	Silver Puffs
<i>Opuntia parryi</i>	Cane Cholla
<i>Opuntia</i> sp.	Prickly Pear
<i>Paeonia californica</i>	California Peony
<i>Pectocarya linearis</i> ssp. <i>ferocula</i>	Slender Pectocarya
<i>Pectocarya penicillata</i>	Winged Pectocarya
<i>Pectocarya setosa</i>	Pectocarya
<i>Penstemon</i> sp.	Penstemon
<i>Phacelia ramosissima</i>	Phacelia
<i>Quercus cornelius-mulleri</i>	Desert Scrub Oak
<i>Rhus ovata</i>	Sugarbush
<i>Salvia columbariae</i>	Chia

TABLE 2. FLORA AND FAUNA DETECTED - TPM 20657 (continued)

<u>Scientific Name</u>	<u>Common Name</u>
<u>Plants (continued)</u>	
<i>Schismus barbatus</i> *	Schismus
<i>Sisymbrium altissimum</i> *	Tumble Mustard
<i>Spergularia</i> sp.	Sand Spurry
<i>Stephanomeria</i> sp.	Stephanomeria
<i>Stylocline gnaphthalioides</i>	Everlasting Nest-straw
<i>Trichostema parishii</i>	Mountain Blue-curls
<i>Yucca schidigera</i>	Mojave Yucca
<i>Yucca whipplei</i>	Our Lord's Candle
<u>Birds</u>	
<i>Aphelocoma coerulescens</i>	Scrub Jay
<i>Carpodacus mexicanus</i>	Housefinch
<i>Cathartes aura</i>	Turkey Vulture
<i>Colaptes auratus</i>	Common Flicker
<i>Corvus corax</i>	Common Raven
<i>Dendroica occidentalis</i>	Hermit Warbler
<i>Dendroica nigrescens</i>	Black-throated Gray Warbler
<i>Geothlypis trichas</i>	Common Yellowthroat
<i>Sturnus vulgaris</i>	Starling
<i>Zenaida macroura</i>	Mourning Dove
<u>Mammals</u>	
<i>Neotoma</i> sp.	Woodrat
<i>Peromyscus maniculatus</i>	Deer Mouse
<i>Sylvilagus audubonii</i>	Desert Cottontail
<i>Sylvilagus bachmani</i>	Brush Rabbit
<i>Thomomys bottae</i>	Valley Pocket Gopher
<u>Reptiles</u>	
<i>Cnemidophorus tigris multiscutatus</i>	Coastal Western Whiptail
<i>Phrynosoma coronatum blainvillei</i>	San Diego Horned Lizard
<i>Uta stansburiana</i>	Side-blotched Lizard

TABLE 2. FLORA AND FAUNA DETECTED - TPM 20657 (continued)

<u>Scientific Name</u>	<u>Common Name</u>
<u>Butterflies</u>	
<i>Anthocharis cethura</i>	Felder's Orangetip
<i>Anthocharis sara</i>	Sara Orangetip
<i>Apodemia mormo virgulti</i>	Behr's Metalmark
<i>Colias</i> sp.	Sulfur Butterfly
<i>Erynnis</i> sp.	Duskywing
<i>Icaricia acmon</i>	Acmon Blue
<i>Incisalia augusta</i>	Brown Elfin
<i>Pontia protodice</i>	Common White
<i>Vanessa annabella</i>	West Coast Lady
<i>Vanessa cardui</i>	Painted Lady
<i>Vanessa</i> sp.	Lady
<hr/>	
Total = 72 species of plants, 29 species of animals detected	
* = non-native taxon bold = sensitive species	

TABLE 3. IMPACT ANALYSIS: HABITATS: THE DART PROPERTY, TPM 20657, BOULEVARD

Biological Resource	Total Acres Onsite (Pre-development)	Acres Impacted (Post-development)	Acres Preserved (Post-development)	Mitigation Required	Mitigation Provided
Semi-desert Chaparral	27.9 acres	27.9 acres ¹	none	14.0 acres @ ½-to-1	offsite
Urban/Developed	5.6 acres	5.6 acres	none	none	none

¹ Assumes full site utilization, with compensatory offsite mitigation provided. See Mitigation Section for discussion of alternatives.

TABLE 4. SENSITIVE SPECIES KNOWN FROM THE VICINITY - THE DART TPM PROPERTY, BOULEVARD

Scientific Name	Common Name	Federally Endangered	Coastal Sage Scrub	Mixed Chaparral	Grassland	Riparian	Oak Woodland	Chamise Chaparral	Mixed Conifer	Closed Cone Forest	Piñon-Juniper	Freshwater Marsh	Desert Scrub	Desert Wash	Salt or Alkali Marsh	Vernal Pools	Montane Meadow	Coastal or Desert Dune Lakes and Bays	Probability of Occurrence
<i>Aimophila ruficeps canescens</i>	Rufous-crowned sparrow		X					X											M
<i>Amphispiza belli belli</i>	Bell's sage sparrow		X	X				X											M
<i>Antrozous pallidus</i>	Pallid bat		X	X	X	X	X	X	X	X	X		X	X				X	M
<i>Aquila chrysaetos</i>	Golden eagle		X	X	X		X	X	X	X	X								M
<i>Astragalus douglasii perstrictus</i>	Jacumba Milk-vetch			X				X			X								O
<i>Bassariscus astutus</i>	Ringtail			X				X											L
<i>Berberis fremontii</i>	Fremont barberry			X							X								L
<i>Cathartes aura</i>	Turkey vulture		X	X	X	X	X	X	X	X									O
<i>Caulanthus simulans</i>	Payson's jewelflower			X				X			X								M
<i>Charina trivirgata roseofusca</i>	Coastal rosy boa		X	X			X	X											M
<i>Cnemidophorus tigris multiscutatus</i>	Coastal western whiptail			X		X	X	X											O
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat			X	X	X	X	X	X	X	X		X	X				X	M
<i>Delphinium parishii subglobosum</i>	Desert larkspur												X						L
<i>Diadophis punctatus similis</i>	San Diego ringneck snake		X	X		X	X	X	X	X									M
<i>Eumops perotis californicus</i>	Greater western mastiff bat		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	M
<i>Euphydryas editha quino</i>	Quino checkerspot butterfly	X	X		X			X					X			X			L
<i>Felis concolor</i>	Mountain lion		X	X		X	X	X	X	X	X		X	X			X		L
<i>Gerea viscida</i>	Sticky gerea			X				X											M
<i>Gilia caruifolia</i>	Caraway leaved gilia				X			X	X										M
<i>Hemizonia floribunda</i>	Tecate tarplant				X	X													L
<i>Hulsea californica</i>	San Diego sunflower			X															M
<i>Hulsea vestita callicarpa</i>	Beautiful hulsea			X				X											M
<i>Lathyrus splendens</i>	Pride of California			X		X		X											L
<i>Lepus californicus bennettii</i>	S. Diego black-tailed jackrabbit		X	X	X		X	X	X	X									M
<i>Linanthus bellus</i>	Desert beauty			X															O
<i>Myotis ciliolabrum</i>	Small-footed myotis			X		X	X	X	X	X	X			X			X		M

TABLE 4. SENSITIVE SPECIES KNOWN FROM THE VICINITY - THE DART TPM PROPERTY, BOULEVARD

Scientific Name	Common Name	Federally Endangered	Coastal Sage Scrub	Mixed Chaparral	Grassland	Riparian	Oak Woodland	Chamise Chaparral	Mixed Conifer	Closed Cone Forest	Piñon-Juniper	Freshwater Marsh	Desert Scrub	Desert Wash	Salt or Alkali Marsh	Vernal Pools	Montane Meadow	Coastal or Desert Dune	Lakes and Bays	Probability of Occurrence
<i>Myotis evotis</i>	Long eared myotis			X		X	X	X	X	X	X						X			M
<i>Myotis thysanodes</i>	Fringed myotis			X		X	X	X	X	X	X						X			M
<i>Myotis volans</i>	Long legged myotis			X		X	X	X	X	X	X						X			M
<i>Myotis yumanensis</i>	Yuma myotis		X	X	X	X	X	X	X	X	X	X			X	X	X		X	M
<i>Neotoma lepida intermedia</i>	San Diego desert woodrat		X			X	X	X												M
<i>Nyctinomops macrotis</i>	Big free-tailed bat		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	M
<i>Nyctinomops femorosaccus</i>	Pocketed free-tailed bat		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	M
<i>Odocoileus hemionus</i>	Southern mule deer		X	X	X	X	X	X	X	X	X		X	X			X			M
<i>Oreortyx pictus eremophila</i>	Mountain quail			X			X	X	X	X	X									L
<i>Pentachaeta aurea</i>	Golden-rayed pentachaeta					X						X								L
<i>Phrynosoma coronatum blainvillei</i>	San Diego horned lizard		X	X	X	X		X	X											O
<i>Ribes canthariforme</i>	Morena currant			X																L
<i>Salvadora hexalepis virgulata</i>	Coast patch-nosed snake		X	X				X			X									M
<i>Sceloporus graciosus vandenburgianus</i>	Southern sagebrush lizard			X					X		X									L
<i>Streptanthus campestris</i>	Southern jewelflower			X							X									M
<i>Taxidea taxus</i>	American badger		X	X	X		X	X	X		X		X	X			X			L

Probability of Occurrence Codes:

L – Low Probability; rare species in area, and no significant habitat (animals), or distinctive perennial that would not have been missed if present onsite (plants).

M – Moderate Probability; could be expected to occur onsite on at least an occasional basis, based on habitat quality (animals), or could occur onsite, but rare, and/or poorly known (plants).

H – High Probability; certain to occur onsite on a regular basis (animals), but cryptic, or ephemeral species known from the immediate vicinity, but seasonal in occurrence (plants).

O – Observed; see text for detailed discussion.

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